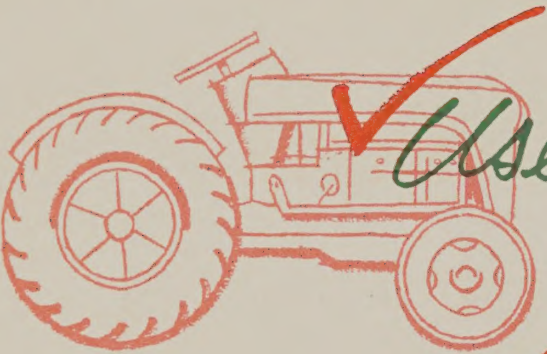


CITIES  SERVICE



farm book *and* **almanac**

1958



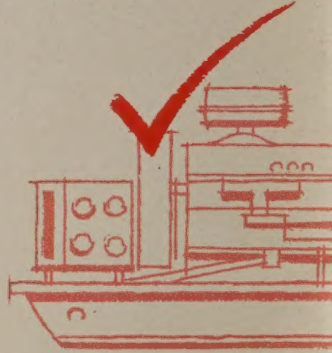
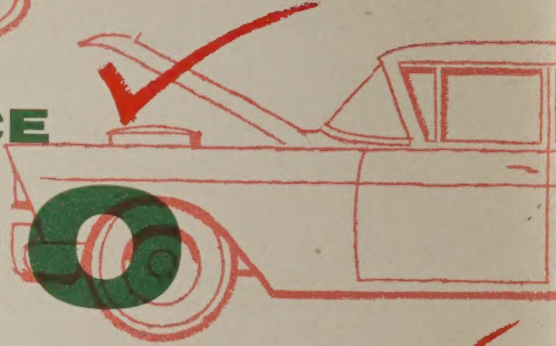
Users Acclaim

CITIES SERVICE



C-300

MOTOR OILS



From a strip miner comes this report: "Shovel and dragline work 20 hours a day, seven days a week. Each has rolled up over 14,000 hours with no major overhaul, using Cities Service C-300 Motor Oil."

From a leading stone company: "Our six stationary diesels, powering our compressors and crushers, have averaged 12,000 hours each before major overhaul, with Cities Service C-300 Oil."

From a trucking company: "Our 20 diesels get up to 225,000 miles before overhaul with Cities Service C-300 Oil. We don't even grind the valves before then."

Owners of farm tractors, heavy-duty trucks and similar gasoline and diesel-powered equipment find that Cities Service C-300 Motor Oils do the job better . . . more economically . . . because they are stable and resist heat. Because they are detergent-type, heavy-duty oils, they actually minimize the formation of varnish, corrosive compounds and high-temperature sludge.

Cities Service C-300 Motor Oil Has API Service Classification MS-DG

Other "C" Series Motor Oils have been especially designed to meet special operating conditions. Your Cities Service representative will be glad to furnish details about them.

less engine wear - better lubrication - Greater mileage

FOREWORD

The trend toward increasing farm mechanization continues at a rapid rate. New and amazing advances in agricultural skills and techniques are constantly being developed and perfected.

Contributing greatly to these advances is the complete line of Cities Service fuels, lubricants, and many other products which make a valuable contribution to the well-being and efficiency of American farmers.

This 1958 edition of the Cities Service Farm Book and Almanac is offered to the many farm families who are customers of the company in the belief that they will find it useful and helpful. It is also an expression of appreciation and gratitude for the mutually beneficial alliance that exists between them.

It carries with it a pledge that Cities Service will continue to make an even greater effort toward advancing the success of farm families by means of intensified research, development, quality production, and friendly service.

Your Cities Service representative is sincerely dedicated to helping you in every way he can. Call on him whenever you need service.

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CITIES SERVICE 4-H KEY CLUB AWARDS

NOW SPONSORED IN 13 STATES



With four more states joining the program, it is expected that 4,500 boys and girls will win the prized gold keys that indicate their outstanding accomplishments in their counties.

The 4-H Key Club Award is a farm program sponsored by Cities Service in cooperation with the United States Department of Agriculture, the Agricultural Extension Divisions of Land Grant Colleges and Universities, and the National Committee on Boys' and Girls' Club work.

The program recognizes 4-H Club members who have shown outstanding leadership ability in their club and county; encourages project growth; and develops a broad program of 4-H activities over the years, with ultimate development of outstanding citizens.

Its purpose is to encourage older 4-H boys and girls to continue their 4-H work and to devote their talent and experience to encouraging younger members. The awards are limited to the top one per cent of club memberships.

Each club member may earn points for

successful completion of various 4-H projects and activities, the points earned being based upon a score card system developed by the state 4-H Club staff. To earn the 4-H Key Club award, a member must have a sufficient number of points to meet the eligibility requirements established by the state 4-H Club staff.

The gold keys are patterned after the college Phi Beta Kappa keys. The keys are mounted on bracelets or neck chains for the girls and on tie clasps for the boys. The name of the recipient and the year are engraved on the back of the keys. In addition to the key, each member is given an appropriately framed personal Honor Certificate.

The club members who earn the Cities Service 4-H Club award become life members of this honorary organization.

The award is now installed in 13 states: Connecticut, Illinois, Indiana, Kansas, Louisiana, Michigan, Minnesota, Missouri, North Dakota, Oklahoma, Tennessee, Virginia, and Wisconsin. It is planned to extend the program to other states.

4-H CLUBS ATTAIN

Greatest year in history

Last year, 2,155,952 rural boys and girls received the benefit of 4-H Club training through the inspired organization that is dedicated to the task of promoting better living for all.

The 4-H Club Program is a part of the system of cooperative work in agriculture and home economics established on a national basis in 1914 and carried on jointly by the United States Department of Agriculture, the State Colleges of Agriculture, and local county governments.

It is a specialized educational enterprise for rural young people 10 to 21 years of age who pledge—"my *head* to clearer thinking; my *heart* to greater loyalty; my *hands* to larger service, and; my *health* to better living for my club, my community, and my country."

It is this country's answer to the need of rural boys and girls for encouragement in the performance of those worthwhile everyday tasks that make for better living and richer personalities. It is founded on the practical arts. It is rooted in the boys'

and girls' environments. It wins its recruits by voluntary means.

The 4-H Club Program has had the benefit of imaginative and inspired leadership. Not the least valuable contribution to the Program's success has been that given by volunteer local leaders. Working without pay, hundreds of thousands of adult farm men and women have been the agents through which the programs of the educators have been made effective.

During the past year, county extension workers have continued their increased emphasis on doing a better job of finding and meeting the needs of the older club members and of young men and women beyond 4-H Club age; in interesting the thousands of farm and rural youth not presently in 4-H Club work; and in keeping members in club work longer than the present average of little more than 2½ years.

In all of the educational activities, extension agents helped local people to get the facts and to plan and carry out their own local self-help programs.

EVENTS OF THE 4-H CLUB YEAR

National 4-H Club Week

March 1-8

National Rural Life Sunday

May 11

National 4-H Conference

June 14-20

National 4-H Club Congress

November 30-December 4

Basic program planning was largely done by county councils or committees of farm and other people concerned. Many of the councils guided the agents on over-all problems of the county and many worked on special agricultural, home, and youth problems.

There's a special place in the affections of America for the 4-H'ers who have helped their communities and developed themselves in service, health, safety, and citizenship activities carried on by each club.

4 million projects completed by 4-H clubs

It is an event in the life of any boy or girl to win a scholarship in some college or university through 4-H Club work. Likewise, the winning by a 4-H Club member of a trip to the county, state or regional club camp, the State Fair, the Club Congress, the National 4-H Club Camp, is an event and an experience never to be forgotten. These and other local, state and national awards for outstanding accomplishment in 4-H Club work all have a high place in stimulating the ambition of club members, promoting club work and developing club morale.

Since the winning of a scholarship, a club trip or other award means so much in the life of the club member who wins it, it may be worthwhile to consider what goes into such accomplishments.

Nearly always club awards are attained only by those who do outstanding project work. This is the first essential. And all 4-H boys or girls who do outstanding work on their projects have a chance to win some kind of recognition—a button, certificate of achievement, medal or an educational trip depending on the size and significance of the project.

While the goal of the 4-H program is to teach farm boys and girls better ways of earning a living—and living—it's the contests and awards, the trips and scholarships,

that keep the program rolling. Americans like to win.

Every club member makes a selection of club projects at the beginning of the year. For the girls, the projects might include cooking, sewing, canning, home improvement, gardening, health, and even livestock feeding. There are many to choose from.

Boys undertake projects in crops, soil



conservation, livestock feeding, health, yard improvement, safety, and many others.

For all 4-H members, there is an opportunity to excel in such fields as citizenship, recreation, leadership, public speaking, and demonstrations. It's "free enterprise" in all its phases from the very beginning.

Projects are selected voluntarily. Club members then must plan and carry out their plans. They learn that they must work hard and consistently, and must be dependable if they are to succeed.

In the end there's competition: in the show ring for the calf that is fattened; in the canned fruit and vegetable contest; in the style revue. They learn how to win and how to lose.

"I wonder how many people realize the hours of struggle, work, fun, discouragement, elation and tears that go into these 4-H projects? Believe me, the effort is great—almost insurmountable for some children and some leaders, but the rewards are worth it." So comments Mrs. Nondus Bithell, HDA in Bingham county, Idaho, in the *National 4-H News*.

"By rewards I don't mean the ribbon or even the premium money, but rather the successful completion of a task—the doing over of the job that isn't quite up to the standard, the sense of accomplishment in having done the job to the best of his ability."

CUT SEEPAGE FROM FARM PONDS

Farm ponds are an increasingly valuable source of water for farms in many parts of the country. During the construction of a new pond or renovation of an old one, precautions should be taken to see that it will not lose excessive amounts of water from seepage.

If there is enough clay in the soil to do a good sealing job, the process will not be too difficult. However, in order to make the seal effective, it is often necessary to puddle the clay.

If there are sand and gravel pockets in the clay bottom, it will be necessary to excavate 12 to 18 inches in the sand or gravel and back-fill this area with clay in order to make a good seal. The clay should be puddled after being placed in the excavation.

There are different methods of puddling ponds in common use. If livestock is available, hogs may be fed in the pond area to do the job. Or, cattle can be salted or fed in the pond during times when the ground is wet or muddy. Later the livestock should be removed from the pond area and kept out thereafter.

Another way to get the puddling done is to use a tractor or team and drive around the water line after each rain. If a weight, such as an old mowing machine wheel, is

pulled behind the team or tractor, the puddling process is speeded.

In order to do a good job of sealing, it is necessary to work with the dirt when it is wet. It usually does not take very many puddlings to be successful.

There is still another method which is often used but which is fairly expensive and requires just as much work as other methods. Bentonite clay, a volcanic clay that will swell about 20 times its volume when wet, is an effective material to use in sealing a pond.

This material is usually applied over the pond basin at the rate of one pound per square foot. It is necessary to work this material into the top two or three inches of soil and roll or pack it firmly so that the first hard rains will not wash it away.

The Bentonite treatment is particularly good on seepage losses from ponds already filled with water. This material can be spread on the surface of the water and allowed to settle to the bottom.

This forms a thin sealing layer without draining the water out of the pond or lake. It is usually necessary to stake out or rope the pond off so that the Bentonite can be spread evenly from a boat. A good seal will be obtained only when the entire area covered by water is protected.

1958		January												1958	
		EASTERN			CENTRAL			MOUNTAIN			PACIFIC				
F. M.		D	H	M	D	H	M	D	H	M	D	H	M		
L. Q.		12	9	01	12	8	01	12	7	01	12	6	01		
N. M.		19	5	08	19	4	08	19	3	08	19	2	08		
F. Q.		27	9	16	27	8	16	27	7	16	27	6	16		
Day of Month	Day of Week	Latitude of Northern States			Latitude of Middle States			Latitude of Southern States							
		Sun rises	Sun sets	Moon sets	Sun rises	Sun sets	Moon sets	Sun rises	Sun sets	Moon sets	Sun rises	Sun sets	Moon sets		
		H	M	H	H	M	H	H	M	H	H	M	H		
1 We	☾	7 30	4 36	3 11	4 7	25	4 42	3 7	7 2	5 5	2 52				
2 Th	☾	7 30	4 37	4 10	4 7	25	4 43	4 7	7 2	5 6	3 49				
3 Fr	☾	7 31	4 38	5 10	5 7	25	4 44	5 6	7 2	5 6	4 45				
4 Sa	☾	7 30	4 39	6 6	5 7	25	4 45	6 2	7 3	5 7	5 40				
1. Day's length 9h. 10m. 9h. 20m. 10h. 5m.															
5 Su	☾	7 30	4 40	rises	6 7	25	4 45	rises	7 3	5 8	rises				
6 Mo	☾	7 30	4 41	6 9	6 7	25	4 46	6 12	7 3	5 9	6 29				
7 Tu	☾	7 30	4 42	7 21	6 7	25	4 47	7 23	7 3	5 10	7 35				
8 We	☾	7 30	4 43	8 33	7 7	25	4 48	8 34	7 3	5 10	8 42				
9 Th	☾	7 30	4 44	9 45	7 7	25	4 49	9 46	7 3	5 11	9 48				
10 Fr	☾	7 30	4 45	10 56	8 7	25	4 50	10 55	7 3	5 12	10 54				
11 Sa	☾	7 29	4 46	morn	8 7	25	4 51	morn	7 3	5 13	11 58				
2. Day's length 9h. 18. 9h. 27m. 10h. 10m.															
12 Su	☾	7 29	4 47	12 7	8 7	25	4 52	12 5	7 3	5 13	morn				
13 Mo	☾	7 28	4 48	1 16	9 7	24	4 53	1 14	7 3	5 14	1 02				
14 Tu	☾	7 28	4 49	2 24	9 7	24	4 54	2 20	7 3	5 15	2 04				
15 We	☾	7 27	4 51	3 28	10 7	24	4 56	3 24	7 2	5 16	3 05				
16 Th	☾	7 27	4 52	4 27	10 7	23	4 57	4 23	7 2	5 17	4 03				
17 Fr	☾	7 27	4 53	5 22	10 7	23	4 58	5 17	7 2	5 18	4 57				
18 Sa	☾	7 26	4 55	6 10	10 7	22	4 59	6 6	7 2	5 19	5 46				
3. Day's length 9h. 30m. 9h. 38m. 10h. 19m.															
19 Su	☾	7 26	4 56	sets	11 7	22	5 0	sets	7 1	5 20	sets				
20 Mo	☾	7 25	4 57	6 9	11 7	21	5 1	6 11	7 1	5 21	6 25				
21 Tu	☾	7 25	4 58	7 9	11 7	21	5 2	7 11	7 1	5 22	7 20				
22 We	☾	7 24	4 59	8 7	11 7	20	5 3	8 8	7 1	5 23	8 14				
23 Th	☾	7 24	5 1	9 5	12 7	20	5 5	9 5	7 0	5 24	9 07				
24 Fr	☾	7 23	5 2	10 3	12 7	19	5 6	10 2	7 0	5 25	10 00				
25 Sa	☾	7 22	5 3	11 0	12 7	18	5 7	10 59	6 59	5 26	10 52				
4. Day's length 9h. 43m. 9h. 51m. 10h. 28m.															
26 Su	☾	7 21	5 4	11 58	12 7	17	5 8	11 55	6 59	5 27	11 45				
27 Mo	☾	7 20	5 6	morn	13 7	16	5 10	morn	6 59	5 28	morn				
28 Tu	☾	7 19	5 7	12 56	13 7	15	5 11	12 53	6 58	5 29	12 39				
29 We	☾	7 18	5 9	1 55	13 7	14	5 13	1 51	6 58	5 30	1 35				
30 Th	☾	7 17	5 10	2 53	13 7	13	5 14	2 49	6 57	5 30	2 29				
31 Fr	☾	7 16	5 11	3 49	14 7	12	5 15	3 45	6 56	5 31	3 24				
WEATHER PREDICTIONS—1-3, snow, rain, colder, frosts; 4-7, colder, clear, snow; 8-11, fair; 12-15, stormy; 16-19, fair, colder, windy; 20-23, fair; 24-27, storms; 28-31, stormy, colder, sunny.															

CITIES SERVICE TROJAN GREASES

Improved Trojan Greases have been developed to give superior performance in a wide variety of applications. Carefully selected basic ingredients, special additives, and modern compounding and manufacturing techniques are used in producing all Trojan Greases. These factors are responsible in great part for the outstanding properties of these products.

type H

Trojan H Greases are the ideal "multi-purpose" lubricants for all types of farm equipment and automotive vehicles. They are lithium-base greases containing high temperature characteristics with excellent low temperature pumpability, good water-resistant properties, and superior stability. Available in four consistencies — Grades H-O to H-3 inclusive.

type A

The new Trojan A Greases are of the soda-base type, containing a heavy-bodied mineral oil. They have excellent oxidation-and-storage stability, good water-and-corrosion-resistant properties and will pump readily at low temperatures. Available in six consistencies, they are recommended primarily as automotive greases, both as a general chassis lubricant and for universal joints and wheel bearings.



type P

A high-quality, buttery-textured type pressure-gun grease for bearings in light- or medium-duty service where a water-resistant, smooth-textured grease may be desired.

type T

A brilliant, amber-colored, water-resistant grease to meet special requirements. Available in buttery or stringy textures; the latter, having high "stay-put" qualities, are especially favored for application to open chains, cams or similar exposed parts.

type W-5

Primarily intended for the lubrication of gland-type bearings of water pumps. An amber-colored grease that possesses a firm, waxy texture. Lubricates and seals against water leakage, regardless of water temperature. Will not form emulsions if it gets into the cooling system.

BETTER PROTECTION AT LOWER COST!

Future FARMERS OF AMERICA



Future Farmers of America is the national organization of, by, and for farm boys who are studying vocational agriculture in public secondary schools which operate under the provisions of the National Vocational Educational Acts. It is an educational, non-profit, non-political farm boy organization of voluntary membership, designed to develop agricultural leadership, character, thrift, scholarship, cooperation, citizenship and patriotism.

The boys must be enrolled in vocational agriculture in order to become eligible for membership. They may retain their membership for three years following their graduation from high school or until they are 21 years of age.

Future Farmers of America is sponsored by the Agricultural Education Branch in the Office of Education, United States Department of Health, Education and Welfare in cooperation with the various state boards for vocational education and local high school departments of vocational agriculture. National headquarters are maintained in Washington, D.C.

Each local chapter and each state association elects its own officers each year. All active members hold the voting privilege in

local chapter meetings. In the annual national conventions, the official delegate body is composed of two representatives from each state association. The teacher of vocational agriculture is the advisor of the local chapter and the state supervisor of agricultural education is the advisor of the state association.

In their FFA activities, members learn how to take part in meetings, follow parliamentary procedure, speak in public, and cooperate with their fellow students for individual and community betterment. Local chapters sponsor and engage in a wide variety of constructive activities. Many activities are designed to stimulate members to do more and better work in agriculture. They

advance through several degrees in the organization from Greenhand to American Farmer . . . all based largely on achievement in farming.

To stimulate increased effort by the students, awards are offered through FFA for outstanding achievement in such fields as electrification, farm mechanics, soil and water management, dairy farming, and farm safety. Members often pool their funds to make quantity purchases of seeds, fertilizers, and other supplies. Many members and chapters engage actively in livestock and poultry judging contests, upgrading of livestock, and organizations for an improved agriculture such as dairy herd improvement associations.

FFA gets wholehearted support from industrial and business firms and individuals. The Future Farmers of America Foundation, Inc., received contributions from a great many cash donors to support a wide variety of awards to FFA members.

Best known of all is the Star Farmer of America award given annually at the national convention to the boy who, in the opinion of the judges, has accomplished the most in farming, leadership, cooperation, and citizenship.



1958

February

1958

	EASTERN				CENTRAL				MOUNTAIN				PACIFIC			
F. M.	D	H	M		D	H	M		D	H	M		D	H	M	
L. Q.	10	6	34	A	10	5	34	A	10	4	34	A	10	3	34	A
N. M.	18	10	38	M	18	9	38	M	18	8	38	M	18	7	38	M
F. Q.	26	3	51	A	26	2	51	A	26	1	51	A	26	0	51	A

Day of Month	Day of Week	Moon's Signs	Latitude of Northern States			SUN SLOW	Latitude of Middle States			Latitude of Southern States		
			Sun rises	Sun sets	Moon sets		Sun rises	Sun sets	Moon sets	Sun rises	Sun sets	Moon sets
			H M	H M	H M		H M	H M	H M	H M	H M	H M

1 Sa 7 15 15 12 4 43 14 7 12 5 16 4 39 6 55 5 32 4 19

5. Day's length 10h. 0m. 10h. 7m. 10h. 39m.

2 Su	7	14	5	14	5	33	14	7	11	5	18	5	29	6	54	5	33	5	10
3 Mo	7	13	5	16	6	18	14	7	10	5	19	6	15	6	54	5	34	5	59
4 Tu	7	12	5	17	rises	14	7	9	5	20	rises	6	53	5	35	rises			
5 We	7	11	5	18	7	26	14	7	8	5	21	7	26	6	52	5	36	7	32
6 Th	7	10	5	19	8	39	14	7	7	5	22	8	39	6	52	5	37	8	39
7 Fr	7	9	5	20	9	53	14	7	6	5	24	9	52	6	51	5	38	9	47
8 Sa	7	7	5	22	11	5	14	7	4	5	25	11	2	6	51	5	39	10	53

6. Day's length 10h. 17m. 10h. 23m. 10h. 50m.

9 Su	7	6	5	23	morn	14	7	3	5	26	morn	6	50	5	40	11	56
10 Mo	7	5	5	25	12	13	14	7	2	5	27	12	10	6	49	5	41
11 Tu	7	4	5	26	1	20	14	7	1	5	28	1	16	6	48	5	42
12 We	7	3	5	28	2	21	14	7	0	5	30	2	17	6	47	5	43
13 Th	7	1	5	29	3	17	14	6	5	5	31	3	13	6	46	5	43
14 Fr	7	0	5	30	4	7	14	6	5	5	32	4	3	6	45	5	44
15 Sa	6	58	5	31	4	51	14	6	56	5	33	4	47	6	44	5	45

7. Day's length 10h. 35m. 10h. 39m. 11h. 3m.

16 Su	6	57	5	32	5	29	14	6	55	5	34	5	25	6	43	5	46
17 Mo	6	55	5	34	6	3	14	6	53	5	36	6	0	6	42	5	47
18 Tu	6	54	5	35	sets	14	6	52	5	37	sets	6	41	5	48	sets	
19 We	6	53	5	36	6	56	14	6	50	5	38	6	57	6	40	5	49
20 Th	6	52	5	38	7	54	14	6	49	5	40	7	53	6	39	5	50
21 Fr	6	50	5	39	8	51	14	6	47	5	41	8	50	6	38	5	51
22 Sa	6	48	5	40	9	48	14	6	46	5	42	9	46	6	37	5	51

8. Day's length 10h. 54m. 10h. 58m. 11h. 16m.

23 Su	6	47	5	41	10	46	13	6	45	5	43	10	43	6	36	5	52
24 Mo	6	45	5	42	11	43	13	6	43	5	44	11	40	6	35	5	53
25 Tu	6	43	5	44	morn	13	6	42	5	46	morn	6	34	5	54	morn	
26 We	6	42	5	45	12	40	13	6	40	5	47	12	36	6	32	5	54
27 Th	6	41	5	46	1	36	13	6	39	5	48	1	32	6	31	5	55
28 Fr	6	39	5	47	2	29	13	6	37	5	49	2	25	6	30	5	56

WEATHER PREDICTIONS—1-3, fair, colder, snow; 4-7, fair; 8-11, storms, heavy snow, rain; 12-15, fair, cold; 16-19, unsettled; 20-23, stormy, snow, pleasant; 24-28, pleasant, snow, fair, frosts.

IRRIGATION BOOSTS

During dry years, the need for irrigation is obvious. However, farmers who are thinking about buying irrigation equipment need to know how many times during the growing season of more normal years this equipment will be needed.

Unfortunately, this information is not known because water loss from a crop cover depends on weather, crop conditions, and the soil moisture support.

By making a few assumptions, it is possible to estimate from weather data, the number of times irrigation water would have been helpful during past years. Even though it is not perfect, this method gives farmers an idea of the expected frequency of needed water treatments in future years under the climatic conditions of a state such as Missouri.

Using weather data, the water used by a plant cover was figured for each day. Whenever 50 per cent of the available soil water had been used, a two-inch irrigation was assumed to be needed. In this way, the number of times an irrigation was needed to bring the soil above 50 per cent of its water-holding capacity was determined.

These irrigation frequencies were figured for each of the past 67 years at Columbia, Missouri. In only 6 per cent of these 67

years was there no need of irrigation during the growing season. In fact, in 8 to 9 years out of 10, irrigation water was needed more than once during the period from June through September. And in 6 years out of 10, more than two applications of water would have been beneficial.

The need for irrigation was not the same throughout the growing season. No irrigation treatments were needed during June 3 out of 4 years.

When July arrived, the need for irrigation rose sharply. Three out of four Julys needed additional moisture. During 10 per cent of the Julys, irrigation treatments could have been used at least four times.

August was similar to July although there was a slightly lower need for water applications. In September, over 50 per cent of the years did not need additional water.

It is impossible to say how much irrigation water means in terms of yields. In experiments during 1952 and 1953, yields increased 26 to 28 bushels an acre in corn as a result of irrigation. However, weather data indicated that twice as much water should have been supplied in 1952 and 5 times as much in 1953.

During the 1954 drouth, a yield of 75 bushels of corn per acre was realized from

CROP YIELDS

the application of about 8½ inches of water but, by the method used here, 10 inches of water should have been applied.

In 1955 and 1956, water supplied by irrigation to the corn plots exceeded that amount determined as necessary from weather data. In this case, about 150 bushels per acre were produced. These corn yields in 1955 and 1956 were 75 and 24 bushels per acre *above* the plots receiving no supplemental water.

Still to be determined are the effects of irrigation on yields during wet years. Also, it is unknown whether or not yields such as those obtained in 1955 and 1956 can be realized during most years.

Much research remains to be conducted on the use of water by plants. On the basis of these preliminary values, it appears that irrigation can be used during the growing season in 95 per cent of the years.

In over 10 per cent of the years, the equipment may be pressed into service more than six times during the period from June to September.

* * *

Irrigation equipment should be purchased with a great deal of thought and planning since the initial investment is high and, if used properly, irrigation means a rearrange-

ment of the whole farm business.

Each irrigation system requires good engineering design and selection of equipment if irrigation is to be a success.

Farmers and farm managers who are considering irrigation have a right to expect the irrigation equipment dealer to furnish the following:

A map of the fields to be irrigated with the layout of the equipment shown.

A guarantee that the irrigation system will perform properly and will conform to standards of performance adopted by the Sprinkler Irrigation Association and the American Society of Agricultural Engineers.

An economic analysis of irrigation, including the cost of the system, labor costs, depreciation costs, operating costs, and other expenditures.

Assistance in setting up and operating the equipment for the first time. The dealer should also provide complete operating instructions and recommendations for improving crop practices under irrigation.

Complete service and parts inventory. This involves the selection of a reputable dealer who will take a genuine interest in the system and service needed.

CITIES SERVICE

Supreme

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ORIGINAL
BRILLIANCE!**



Here's the triple-action formula liquid polish that **CLEANS** dull, oxidized finishes . . . **POLISHES** to a glass-like luster . . . and leaves a long-lasting wax **PROTECTION** against all weather conditions. Outshines and outlasts ordinary polishes because it contains wonder-working silicones. Easy to apply . . . in one single operation.



ANTIBIOTICS HELP BEEF PRODUCTION

Antibiotics have established themselves as being of value in beef production whether they are used for suckling calves, growing cattle or fattening cattle. This is the observation of Dr. T. W. Perry, Purdue University animal nutritionist.

Feeding aureomycin to suckling calves has resulted in almost complete control of scours in Purdue tests. The calves were fed 20 milligrams of aureomycin daily—in capsule or pellet form—and gained 10 per cent more rapidly, showed no signs of scouring, and had a sleeker hair coat. Similar results have been obtained with terramycin.

Yearling steers fed ground corn cobs and Purdue Supplement A plus 75 milligrams of aureomycin daily, gained 43 pounds more and exhibited a sleeker hair coat than cattle that were not fed antibiotics. Here again, terramycin produced similar results.

In nearly every trial in which cattle were fed antibiotics, the cattle went "off feed" for a few days. However, appetites returned to normal during the first week, and no further

effects on feed consumption were noted.

Fattening cattle fed a full feed of corn silage and 3.5 pounds of Supplement A gained about 15 per cent more than when 75 to 85 milligrams of either aureomycin or terramycin per day were added in a Purdue experiment. The cattle went through the usual adjustment during the first week, then settled down to normal but did not consume more than they had before the antibiotics had been added. This meant that the cattle gained more efficiently than those not fed antibiotics.

Cattle fed fresh chopped green corn plus supplement also showed a considerable increase in gain and feed efficiency.

Perry concludes that cattle fattened on a high-roughage ration plus 3.5 pounds of Supplement A and 75-85 milligrams of antibiotics can be expected to gain from .25 to .4 pounds more per day, and do it at an extra cost of less than 1 cent per head per day. It pays to consider antibiotics.

1958

March

1958

		EASTERN			CENTRAL			MOUNTAIN			PACIFIC				
F. M.		D 5	H 1	M 28	A 5	H 0	M 28	A 5	H 11	M 28	M 5	H 10	M 28	M 5	
L. Q.		12	5	48	M 12	4	48	M 12	3	48	M 12	2	48	M 12	
N. M.		20	4	50	M 20	3	50	M 20	2	50	M 20	1	50	M 20	
F. Q.		28	6	18	M 28	5	18	M 28	4	18	M 28	3	18	M 28	

Day of Month	Day of Week	Moon's Signs	Latitude of Northern States				SUN SLOW	Latitude of Middle States				Latitude of Southern States			
			Sun rises		Sun sets	Moon sets		Sun rises		Sun sets	Moon sets	Sun rises		Sun sets	Moon sets
			H M	H M	H M	M		H M	H M	H M	H M	H M	H M	H M	H M
1	Sa	☾	6 38	5 49	3 20	12 6	36 5	50	3 16	6 29	5 57	2 57			
9.			Day's length 11h. 14m. 11h. 17m. 11h. 30m.												
2	Su	☾	6 36	5 50	4 6	12 6	34 5	51	4 2	6 28	5 58	3 46			
3	Mo	☾	6 34	5 51	4 49	12 6	33 5	52	4 46	6 27	5 59	4 32			
4	Tu	☾	6 32	5 52	5 28	12 6	31 5	53	5 26	6 26	5 59	5 17			
5	We	☾	6 31	5 53	rises	12 6	30 5	54	rises	6 24	6 0	rises			
6	Th	☾	6 29	5 54	7 29	11 6	28 5	55	7 28	6 23	6 1	7 26			
7	Fr	☾	6 28	5 55	8 45	11 6	27 5	56	8 43	6 22	6 1	8 35			
8	Sa	☾	6 26	5 57	9 58	11 6	25 5	58	9 55	6 21	6 2	9 43			
10.			Day's length 11h. 34m. 11h. 36m. 11h. 44m.												
9	Su	☾	6 24	5 58	11 8	11 6	23 5	59	11 04	6 19	6 3	10 48			
10	Mo	☾	6 22	5 59	morn	10 6	22 6	0	morn	6 18	6 4	11 49			
11	Tu	☾	6 21	6 1	12 13	10 6	20 6	2	12 09	6 17	6 4	morn			
12	We	☾	6 19	6 2	1 12	10 6	18 6	3	1 08	6 15	6 5	12 48			
13	Th	☾	6 17	6 3	2 4	10 6	16 6	4	2 0	6 14	6 6	1 41			
14	Fr	☾	6 16	6 4	2 50	9 6	15 6	5	2 46	6 13	6 6	2 27			
15	Sa	☾	6 14	6 5	3 29	9 6	13 6	6	3 25	6 12	6 7	3 9			
11.			Day's length 11h. 54m. 11h. 55m. 11h. 57m.												
16	Su	☾	6 12	6 6	4 5	9 6	12 6	7	4 2	6 11	6 8	3 49			
17	Mo	☾	6 11	6 8	4 36	8 6	10 6	8	4 33	6 9	6 9	4 24			
18	Tu	☾	6 9	6 9	5 5	8 6	8 6	9	5 3	6 8	6 10	4 58			
19	We	☾	6 7	6 10	5 32	8 6	7 6	10	5 31	6 6	6 10	5 30			
20	Th	☾	6 5	6 11	sets	8 6	5 6	11	sets	6 5	6 11	sets			
21	Fr	☾	6 4	6 12	7 42	7 6	4 6	12	7 40	6 4	6 12	7 33			
22	Sa	☾	6 2	6 13	8 39	7 6	2 6	13	8 36	6 2	6 13	8 26			
12.			Day's length 12h. 14m. 12h. 14m. 12h. 12m.												
23	Su	☾	6 0	6 14	9 36	7 6	0 6	14	9 33	6 1	6 13	9 19			
24	Mo	☾	5 59	6 15	10 33	6 5	59 6	15	10 29	6 0	6 14	10 13			
25	Tu	☾	5 57	6 17	11 29	6 5	57 6	16	11 25	5 58	6 14	11 6			
26	We	☾	5 55	6 18	morn	6 5	55 6	17	morn	5 57	6 15	11 58			
27	Th	☾	5 53	6 19	12 21	5 5	54 6	18	12 17	5 55	6 16	morn			
28	Fr	☾	5 51	6 21	1 12	5 5	52 6	20	1 8	5 54	6 17	12 48			
29	Sa	☾	5 49	6 22	1 58	5 5	50 6	21	1 54	5 53	6 17	1 37			
13.			Day's length 12h. 36m. 12h. 34m. 12h. 26m.												
30	Su	☾	5 47	6 23	2 40	4 5	48 6	22	2 37	5 52	6 18	2 22			
31	Mo	☾	5 46	6 24	3 20	4 5	46 6	23	3 18	5 51	6 19	3 6			

WEATHER PREDICTIONS—1-3, unsettled, rain; 4-7, snow, fair, pleasant; 8-11, snow, rain; 12-15, clearing, cold, snow, rain; 16-19, fair, cold; 20-23, snow or rain; 24-27, sunny; 28-31, unsettled,

minimum TILLAGE PRODUCES GOOD CORN YIELDS

Two new cropping practices—minimum tillage and tractor-track planting—have made it possible to produce 100 bushels of corn per acre by doing much less field work.

Minimum tillage means working the soil less or not at all before planting, and cultivating only when necessary to control weeds during the growing season. Tractor-track planting means planting corn directly on undisked plowed ground, in the tractor's wheel tracks.

By eliminating disking and harrowing and cultivating less, a farmer can save up to a full hour or more of man and machine time for every acre of corn he raises.

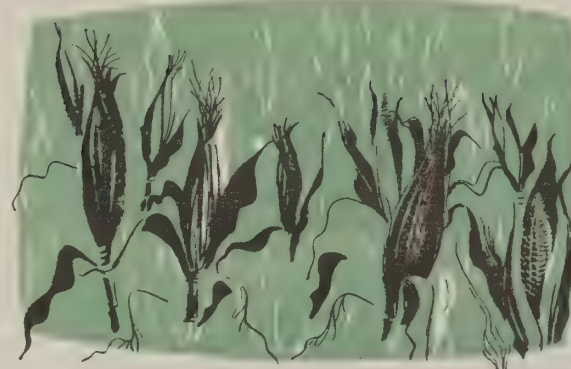
Under the conventional corn planting system, most farmers plow the sod in the fall, then disk the land several times in the spring before planting. They usually go over the field with a spike tooth harrow once before planting and once again immediately after the corn is planted. Common practice has also been to cultivate two or more times during the growing season.

The idea has been that a thorough disk-

ing makes a better seedbed but that is not always true. Sometimes there's a tendency to overwork the soil with resulting soil compaction. Crops need a soil that is firm but not over-compacted. To prevent this compaction, it is necessary to avoid overworking so as to retain a "crumb" structure in the soil.

In the wheel track planting method, the field is plowed just before planting. The furrow slice should not be allowed to dry out and become hard. If this is allowed the stand may be poor. Rain should not intervene after the land is plowed and before planting. If it does, the land should be disked, prepared, and seeded in the usual manner.

The corn row, in the wheel-track method, is placed directly in the tractor wheel tracks which provide a good, firm seedbed, by adjusting the rear wheels to 40 to 44 inches. If this cannot be done, two or four special wheels can be mounted on the tractor-mounted cultivator frame at 40-inch spacing. These wheels can then be used to compact the soil where the seed is planted.



In this system of planting, fewer trips are made over the field in preparing the land. It is estimated that each trip that can be eliminated means a saving of about \$1 per acre. Because the surface of the soil is left open and loose, the rate at which the water can enter the soil is increased. This should mean more water for crops during periods of little rainfall.

The system has certain disadvantages or limitations that should not be over-looked. Plowing is delayed until planting time, thus making the farmer's planting rate determined by the rate at which he can plow. Hence the system is too slow for large acreage of corn. In addition, delayed plowing of sod may result in drying out of the soil. This may cause yield reduction in dry years.

Good plowing is a must in this system. Even with good plowing at the proper time, it may be difficult to get a good seedbed on heavy, sticky, or drouthy soils.

However, it should also be realized that minimum tillage and tractor-track planting

(continued on page 14)

(continued from page 13)

have advantages over and above time and labor savings. For example, by staying off the field in early spring, the soil is not packed as much.

Second, less tillage leaves a better soil structure. When the soil is loose, it has better aeration and more of the summer rain will go into the soil and stay in storage for dry periods.

Third, there's less erosion on sloping land when the soil is worked less. Minimum tillage also helps control weeds because weed seeds can't germinate well in loose soil.

Finally, by cultivating the corn less, there's less soil packing later on and less "root pruning."

Comments of some farmers after our minimum tillage and tractor-track planting ran as follows:

"The corn came up a little faster when planted in tractor wheel tracks. There were less weeds in tractor-track planting.

"The ground seemed to hold the moisture better between cultivations.

"The corn looked the same on both plots all season. There was less quack grass and weeds on the field where I used minimum tillage."

In Wisconsin, it has been found that wheel-track corn planting works particularly well when weather conditions are unfavorable for regular corn planting. This was shown last year when the soil was dry at

planting time and for three weeks afterward, with two weeks of heavy rain following the dry spell.

In Minnesota, although most of last year's minimum tillage tests were on spring-plowed fields, it is believed that for Minnesota as a whole, fall-plowing may be best for fine-textured soils such as silt and clay loams. More field research will be conducted on whether minimum tillage will be practical on fall-plowed soil in that State.

In Minnesota, Russell Miller used the wheel-track corn planting system on 10 acres of his corn land and found his yields were just as good as where he planted corn in the conventional manner. By eliminating the disking, Miller saved a good half day of work and expense.

Normally, Miller would plow the field, then disk and "drag" the field once before planting—a task that would take a good half day for a 10-acre field. Wheel-track planting makes the disking unnecessary.

Miller says wheel-track planting was also an aid in weed control, for this reason: The corn row was planted in the wheel track, which left a shallow trench in the fresh plowing. Miller didn't cultivate the corn until it was 6 inches tall; but when he did cultivate, he was able to roll soil into the row trench and cover up the weeds without injuring the corn. That, he says, wouldn't work as well on corn planted on a perfectly level field.

1958

April

1958

	EASTERN			CENTRAL			MOUNTAIN			PACIFIC		
F. M.	D	H	M	D	H	M	D	H	M	D	H	M
L. Q.	10	6	50	10	5	50	10	4	50	10	3	50
N. M.	18	10	23	18	9	23	18	8	23	18	7	23
F. Q.	26	4	36	26	3	36	26	2	36	26	1	36

Day of Month	Day of Week	Moon's Signs	Latitude of Northern States						SUN SLOW	Latitude of Middle States						Latitude of Southern States						
			Sun rises		Sun sets		Moon sets			Sun rises		Sun sets		Moon sets		Sun rises		Sun sets		Moon sets		
			H	M	H	M	H	M		M	H	M	H	M	H	M	H	M	H	M	H	M
1	Tu	♈	5	44	6	25	3	58	4	5	45	6	24	3	56	5	49	6	19	3	4	
2	We	♈	5	43	6	26	4	34	4	5	43	6	25	4	33	5	48	6	20	4	3	
3	Th	♈	5	40	6	27	rises		3	5	41	6	26	rises		5	47	6	21	rises		
4	Fr	♈	5	39	6	28	7	31	3	5	40	6	27	7	29	5	45	6	21	7	2	
5	Sa	♈	5	37	6	29	8	46	3	5	38	6	28	8	42	5	44	6	22	8	2	
14. Day's length 12h. 55m. 12h. 52m. 12h. 40m.																						
6	Su	♈	5	35	6	30	9	55	2	5	37	6	29	9	51	5	43	6	23	9	3	
7	Mo	♈	5	34	6	31	11	0	2	5	35	6	30	10	56	5	42	6	23	10	3	
8	Tu	♈	5	32	6	32	11	56	2	5	33	6	31	11	52	5	41	6	24	11	3	
9	We	♈	5	30	6	34	morn		2	5	32	6	32	morn		5	39	6	25	morn		
10	Th	♈	5	29	6	35	12	46	1	5	30	6	33	12	42	5	38	6	26	12	3	
11	Fr	♈	5	27	6	36	1	28	1	5	29	6	34	1	24	5	37	6	26	1	4	
12	Sa	♈	5	25	6	37	2	5	1	5	27	6	35	2	2	5	35	6	27	1	4	
15. Day's length 13h. 14m. 13h. 10m. 12h. 54m.																						
13	Su	♈	5	24	6	38	2	38	0	5	26	6	36	2	35	5	34	6	28	2	2	
14	Mo	♈	5	22	6	39	3	8	0	5	24	6	37	3	6	5	33	6	28	3	2	
15	Tu	♈	5	20	6	40	4	36	Fst	5	23	6	38	3	35	5	32	6	29	3	3	
16	We	♈	5	19	6	42	4	3	0	5	21	6	40	4	3	5	30	6	30	4	3	
17	Th	♈	5	17	6	43	4	30	0	5	19	6	41	4	30	5	29	6	31	4	3	
18	Fr	♈	5	16	6	44	sets		1	5	18	6	42	sets		5	28	6	31	sets		
19	Sa	♈	5	14	6	45	7	31	1	5	16	6	43	7	28	5	27	6	32	7	1	
16. Day's length 13h. 35m. 13h. 30m. 13h. 7m.																						
20	Su	♈	5	12	6	47	8	28	1	5	14	6	44	8	24	5	26	6	33	8	1	
21	Mo	♈	5	11	6	48	9	24	1	5	13	6	46	9	20	5	25	6	33	9	2	
22	Tu	♈	5	9	6	49	10	17	2	5	11	6	46	10	13	5	24	6	34	9	5	
23	We	♈	5	8	6	50	11	9	2	5	10	6	47	11	5	5	22	6	35	10	4	
24	Th	♈	5	6	6	51	11	56	2	5	8	6	48	11	52	5	21	6	36	11	3	
25	Fr	♈	5	4	6	52	morn		2	5	7	6	50	morn		5	20	6	37	morn		
26	Sa	♈	5	3	6	53	12	38	2	5	6	6	51	12	34	5	19	6	37	12	1	
17. Day's length 13h. 52m. 13h. 48m. 13h. 20m.																						
27	Su	♈	5	2	6	54	1	18	2	5	4	6	52	1	15	5	18	6	38	1	2	
28	Mo	♈	5	0	6	56	1	55	3	5	3	6	53	1	52	5	17	6	38	1	4	
29	Tu	♈	4	59	6	57	2	29	3	5	2	6	54	2	28	5	16	6	39	2	2	
30	We	♈	4	57	6	58	3	3	3	5	0	6	55	3	3	5	15	6	40	3	3	

WEATHER PREDICTIONS—1-3, stormy, snow; 4-7, stormy, rains, sunny; 8-11, fair, colder, snow; 12-15, showers; 16-19, showers; 20-23, clear, colder; 24-27, showers, unsettled; 28-30, storms.

Claim ALL your allowable depreciation

The depreciation allowances in taxes are made with the idea that the amounts charged off as depreciation can be considered as savings which are to be used to replace the article at the end of its normal useful life.

Depreciation is an operating expense and is subtracted directly from income. Many farmers fail to claim their allowable depreciation either because they are not aware of the amount that is allowable or they are not willing to set up a depreciation schedule (record of depreciable items and amounts of depreciation allowable).

Failure to claim allowable depreciation leads to two serious errors in income tax reporting. They are:

1. You pay more federal income tax than is necessary, and
2. Your self-employment income will be incorrect.

The Social Security law requires that all allowable depreciation must be deducted when calculating self-employment for Social Security coverage.

On many farms the annual deduction of allowable depreciation, when figured properly, may be larger than the fertilizer bill. The time spent preparing a depreciation record and charging off the proper amount to your income tax returns, may be highly profitable. Depreciation records are not par-

ticularly difficult to prepare.

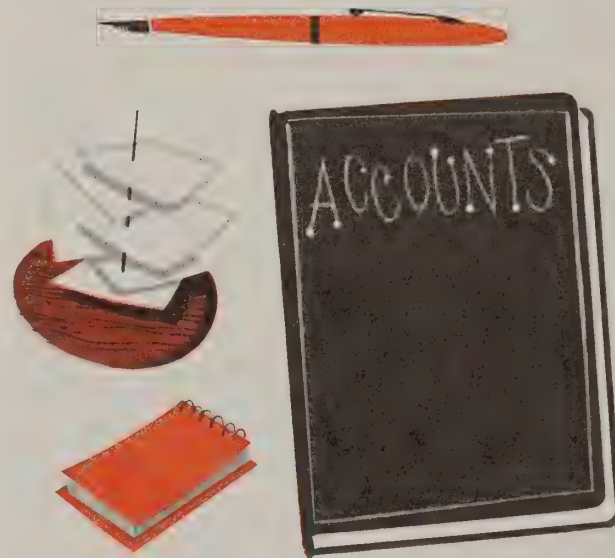
The most convenient way to prepare a depreciation record is to obtain a set of forms prepared and printed by your State Extension service and available through your County Agent, usually for 25 cents. In most cases, the booklet in which these forms are printed, will also include an explanation of how to use them.

The only legal way by which a farmer can recover the cost of machinery, equipment, farm buildings, and other property used to produce income and which has a useful life of more than one year, is through depreciation.

These items may not be charged off entirely within one year. Almost all property or assets used to produce income are depreciable provided they have a cost basis from which to figure depreciation.

Some depreciable items used in farming are:

1. Buildings (other than dwelling occupied by owner and on personal and household equipment owned by him),
2. Machinery and equipment,
3. Livestock used for work, dairy or breeding purposes, providing such animals were *purchased* and *not included in the inventory* in case the *accrual* method is used.
4. Fences and tile drains,



5. Orchards, groves, and vineyards upon reaching producing age,
6. Trucks used for business and automobiles (business portion only), and
7. Tanks, vats, water wells and loading pens. There are other items which may be depreciable. Bulletin F', Internal Revenue Service, gives a fairly complete list together with the average life of each agricultural item.

Land is never depreciable. Timber held as an investment and not as part of the farm

(continued on page 16)

(continued from page 15)

business is not depreciable from year to year but a depletion charge may be deducted when the timber is sold.

Depreciation cannot be claimed on any animals raised by you. If you have already charged off the cost of some items, depreciation must not be started on them now. This is a serious violation of the tax law.

In figuring depreciation, the first step is to determine the cost basis of the depreciable items. In most cases, the cost of the property will be its basis.

The cost basis of property acquired by inheritance or through a bequest or a devise under a will, generally will be the fair market value of the property at the time of the death of the owner. If property is acquired by gift after 1920, the basis for figuring depreciation will be the cost or other basis to the donor.

In the case of a trade, the basis of the newly acquired property is usually the unrecovered cost (original cost minus depreciation) of the item traded plus the cash difference. For example, a farmer trades in his tractor which has unrecovered cost of \$200 for another tractor and pays \$1,500 cash difference. The cost basis of the new tractor for figuring depreciation will be \$1,700 (\$1,500 plus \$200).

After determining the basis for depreciation, the next step is to determine the useful life of each item in your depreciation record.

There are no set rules for determining useful life. It depends upon the circum-

stances on your farm and type of farm operation.

The final step in figuring depreciation is to divide the cost basis of the item (less a reasonable salvage) by the length of life. The result will be the annual amount of allowable depreciation. This method, known as the straight-line, is the one most frequently used by farmers.

Following is a simple example of figuring depreciation by the straight-line method. A farmer buys a tractor for \$2,100 and decides that the useful life is 10 years. He also decides that the tractor will have a salvage value of \$100 at the end of its useful life. He subtracts \$100 from \$2,100 leaving \$2,000 as the basis for depreciation. He divides 10 into \$2,000 and the result is an annual depreciation charge of \$200 for a period of 10 years. He deducts this \$200 on page 3 of Schedule F under Depreciation.

Three other methods for figuring depreciation are also available: (1) The double-declining balance method; (2) The sum-of-the-digits method; and (3) Any other method of figuring depreciation which does not amount to more write-off at the end of two-thirds of the estimated life of the machine or building than with the double-declining method.

Only the straight-line method may be used if the useful life of the property is less than 3 years. Neither the double-declining balance method nor the sum-of-the-digits method can be used for depreciating used or second-hand farm equipment.

1958		May												1958	
		EASTERN			CENTRAL			MOUNTAIN			PACIFIC				
F. M.		D	H	M	D	H	M	D	H	M	D	H	M		
L. Q.		10	9	37	10	8	37	10	7	37	10	6	37		
N. M.		18	2	00	18	1	00	18	0	00	18	11	00		
F. Q.		25	11	38	25	10	38	25	9	38	25	8	38		
Day of Month	Day of Week	Moon's Signs	Latitude of Northern States			Latitude of Middle States			Latitude of Southern States						
			Sun rises	Sun sets	Moon sets	Sun rises	Sun sets	Moon sets	Sun rises	Sun sets	Moon sets	Sun rises	Sun sets	Moon sets	
			H	M	H	M	H	M	H	M	H	M	H	M	
1	Th	☾	4 56	6 59	3 39	3 4	59	6 56	3 40	5 14	6 41	3 47			
2	Fr	☾	4 55	7 0	4 18	3 4	58	6 57	4 20	5 13	6 41	4 29			
3	Sa	☾	4 53	7 2	rises	3 4	57	6 58	rises	5 12	6 42	rises			
18. Day's length 14h. 11m. 14h. 4m. 13h. 32m.															
4	Su	☾	4 52	7 3	8 40	3 4	55	6 59	8 36	5 11	6 43	8 17			
5	Mo	☾	4 51	7 4	9 41	3 4	54	7 0	9 37	5 10	6 44	9 17			
6	Tu	☾	4 49	7 5	10 36	3 4	53	7 1	10 32	5 9	6 44	10 13			
7	We	☾	4 48	7 6	11 24	4 4	52	7 2	11 20	5 8	6 45	11 2			
8	Th	☾	4 47	7	morn	4 4	51	7 3	morn	5 7	6 46	11 45			
9	Fr	☾	4 46	7	12 3	4 4	49	7	12 1	5 6	6 46	morn			
10	Sa	☾	4 44	7	9 12 39	4 4	48	7	12 36	5 5	6 47	12 24			
19. Day's length 14h. 27m. 14h. 19m. 13h. 43m.															
11	Su	☾	4 43	7 10	1 9	4 4	47	7 6	1 7	5 5	6 48	12 57			
12	Mo	☾	4 42	7 11	1 39	4 4	46	7 8	1 38	5 4	6 49	1 33			
13	Tu	☾	4 41	7 12	2 6	4 4	45	7 9	2 5	5 3	6 49	2 4			
14	We	☾	4 40	7 13	2 33	4 4	44	7 10	2 34	5 3	6 50	2 36			
15	Th	☾	4 39	7 14	3 1	4 4	43	7 11	3 2	5 2	6 51	3 8			
16	Fr	☾	4 38	7 16	3 31	4 4	42	7 11	3 33	5 1	6 52	3 43			
17	Sa	☾	4 37	7 17	4 2	4 4	41	7 12	4 5	5 1	6 52	4 19			
20. Day's length 14h. 42m. 14h. 33m. 13h. 53m.															
18	Su	☾	4 36	7 18	sets	4 4	40	7 13	sets	5 0	6 53	sets			
19	Mo	☾	4 35	7 19	8 14	4 4	39	7 14	8 10	5 0	6 53	7 50			
20	Tu	☾	4 34	7 20	9 6	4 4	38	7 15	9 2	4 59	6 54	8 42			
21	We	☾	4 33	7 21	9 54	4 4	37	7 16	9 50	4 58	6 55	9 31			
22	Th	☾	4 33	7 22	10 38	4 4	37	7 17	10 34	4 57	6 55	10 18			
23	Fr	☾	4 32	7 23	11 19	4 4	36	7 18	11 16	4 57	6 56	11 2			
24	Sa	☾	4 30	7 24	11 55	4 3	35	7 19	11 52	4 56	6 57	11 43			
21. Day's length 14h. 55m. 14h. 45m. 14h. 2m.															
25	Su	☾	4 29	7 25	morn	4 3	34	7 19	morn	4 56	6 58	morn			
26	Mo	☾	4 29	7 25	12 31	4 3	34	7 20	12 30	4 55	6 58	12 23			
27	Tu	☾	4 28	7 26	1 4	4 3	33	7 21	1 3	4 55	6 59	1 1			
28	We	☾	4 28	7 27	1 37	4 3	33	7 22	1 38	4 54	7 0	1 40			
29	Th	☾	4 27	7 28	2 13	4 3	32	7 23	2 14	4 54	7 0	2 22			
30	Fr	☾	4 26	7 29	2 52	4 3	31	7 24	2 54	4 54	7 1	3 6			
31	Sa	☾	4 26	7 30	3 35	4 3	31	7 25	3 38	4 54	7 1	3 54			
WEATHER PREDICTIONS—1-3, gales, colder; 4-7, fine spring weather; 8-11, clear, cooler, showers; 12-15, fair windy; 16-19, squalls, windy; 20-23, storms; 24-27, fair, storms; 28-31, stormy.															



COOL HOGS MAKE FASTER GAINS

Lack of enough shade and water for growing, fattening hogs cost producers by cutting gains and feed efficiency.

The fattening hog makes the fastest gains when the temperature is between 60 and 70 degrees F. When the air temperature rises higher, two things happen—rate of gain drops and feed needed per pound of gain goes up.

The hog has no sweat glands except in the snout and must do without the cooling effect of evaporation in hot weather. As a result, he must have shade and plenty of good water to make fast and efficient gains during the hot summer months.

Natural shade as furnished by trees is probably the most effective type.

A scrap lumber or woven wire framework covered with straw and supported by posts set 10 feet apart, makes an inexpensive and satisfactory shade. It can be made as large as desired in either a square or rectangular outline.

It is necessary that the supporting posts be long enough to keep the shading material at least four or five feet above ground so that there will be plenty of air circulation. A shade 20 by 40 feet provides room for 50 to 70 fattening hogs.

Sheds on which the sides can be raised make good shades and can also be used for shelter during the winter. The important thing about the shade is that it reflects the sun's rays and permits free air circulation.

A hog can go without food for a long time without starving but to be without water for a short time in hot weather can be fatal. Automatic waterers are the most satisfactory method of furnishing drinking water for hogs.

These may be connected to a permanent water supply such as a deep well or a pond or they may be attached to tanks or barrels which must be filled frequently. One automatic watering cup will generally take care of 20 pigs.

If hogs are watered by hand in a trough, they should be watered at least three times a day during hot weather. Troughs should be built so that the pigs can't get in them and they need to be heavy enough so that pigs can't turn them over. A fattening hog will use from one to two gallons of water per day.

Shade, feed, and water should be located close together to permit the hogs to eat, drink, and sleep without taking the long walks they often refuse to make in the heat of the day.

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✓ **UNMATCHED PROTECTION
FOR GEARS**

Help prevent the damage often caused by farm dust and grit by keeping gear cases filled to the proper level with fresh, clean TROJAN GEAR OILS. They give unmatched protection to vital gears and supporting bearings. Make farm equipment last longer at lower cost.

(See charts on pages 26-31 inclusive.)

1958

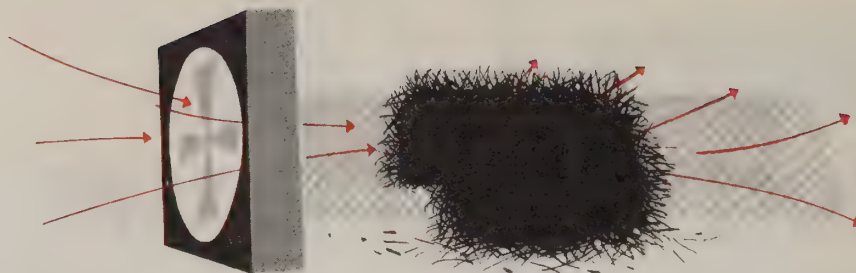
June

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	EASTERN	CENTRAL	MOUNTAIN	PACIFIC
F. M.	1 3 55 A	1 2 55 A	1 1 55 A	1 0 55 A
L. Q.	9 1 59 M	9 0 59 M	8 11 59 A	8 10 59 A
N. M.	17 2 59 M	17 1 59 M	17 0 59 M	16 11 59 A
F. Q.	24 4 44 M	24 3 44 M	24 2 44 M	24 1 44 M

Day of Month	Day of Week	Moon's Signs	Latitude of Northern States						SUN FAST	Latitude of Middle States						Latitude of Southern States							
			Sun rises		Sun sets		Moon rises			Sun rises		Sun sets		Moon rises		Sun rises		Sun sets		Moon rises			
			H	M	H	M	H	M		M	H	M	H	M	H	M	H	M	H	M	H	M	
22.			Day's length 15h. 5m.							14h. 55m.							14h. 9m.						
1	Su	☿	4	25	7	30		7	23	2	4	30	7	25		7	19	4	53	7	2	6	59
2	Mo	☿	4	25	7	31		8	23	2	4	30	7	26		8	18	4	53	7	2	7	58
3	Tu	☿	4	24	7	32		9	14	2	4	30	7	26		9	10	4	53	7	3	8	51
4	We	☿	4	23	7	33		9	58	2	4	29	7	27		9	55	4	53	7	4	9	38
5	Th	☿	4	23	7	34		10	37	2	4	29	7	28		10	34	4	52	7	4	10	20
6	Fr	☿	4	23	7	34		11	10	1	4	28	7	28		11	7	4	52	7	5	10	57
7	Sa	☿	4	23	7	35		11	40	1	4	28	7	29		11	39	4	52	7	5	11	32
23.			Day's length 15h. 14m.							15h. 2m.							14h. 14m.						
8	Su	☿	4	22	7	36		morn		1	4	28	7	30		morn		4	52	7	6		morn
9	Mo	☿	4	22	7	36		12	8	1	4	27	7	31		12	7	4	52	7	6	12	5
10	Tu	☿	4	22	7	37		12	36	1	4	27	7	31		12	36	4	51	7	6	12	37
11	We	☿	4	22	7	37		1	3	0	4	27	7	32		1	3	4	51	7	7	1	9
12	Th	☿	4	22	7	38		1	31	0	4	27	7	32		1	33	4	51	7	7	1	42
13	Fr	☿	4	22	7	38		2	3	St.	4	27	7	33		2	5	4	51	7	7	2	17
14	Sa	☿	4	21	7	38		2	38	0	4	27	7	33		2	41	4	51	7	8	2	56
24.			Day's length 15h. 18m.							15h. 8m.							14h. 17m.						
15	Su	☿	4	21	7	39		3	17	0	4	26	7	34		3	21	4	51	7	8	3	39
16	Mo	☿	4	21	7	39		4	2	1	4	26	7	34		4	6	4	51	7	9	4	26
17	Tu	☿	4	21	7	40		sets		1	4	26	7	35		sets		4	52	7	10		sets
18	We	☿	4	21	7	40		8	38	1	4	26	7	35		8	34	4	52	7	10	8	16
19	Th	☿	4	21	7	41		9	19	1	4	27	7	36		9	16	4	52	7	10	9	
20	Fr	☿	4	22	7	41		9	58	1	4	27	7	36		9	56	4	52	7	11	9	44
21	Sa	☿	4	22	7	41		10	34	2	4	27	7	36		10	32	4	52	7	11	10	24
25.			Day's length 15h. 19m.							15h. 9m.							14h. 18m.						
22	Su	☿	4	22	7	41		11	7	2	4	27	7	36		11	6	4	53	7	11	11	3
23	Mo	☿	4	22	7	41		11	39	2	4	27	7	36		11	40	4	53	7	11	11	42
24	Tu	☿	4	23	7	41		morn		2	4	28	7	36		morn		4	53	7	11		morn
25	We	☿	4	23	7	42		12	14	2	4	28	7	37		12	15	4	54	7	11	12	21
26	Th	☿	4	23	7	42		12	51	3	4	28	7	37		12	53	4	54	7	12	1	3
27	Fr	☿	4	24	7	42		1	30	3	4	29	7	37		1	33	4	54	7	12	1	48
28	Sa	☿	4	24	7	42		2	15	3	4	29	7	37		2	19	4	54	7	12	2	36
26.			Day's length 15h. 18m.							15h. 7m.							14h. 17m.						
29	Su	☿	4	24	7	42		3	6	3	4	29	7	36		3	9	4	55	7	12	3	29
30	Mo	☿	4	25	7	42		4	2	4	4	30	7	36		4	6	4	55	7	12	4	26

WEATHER PREDICTIONS—1-3, pleasant; 4-7, clearing; 8-11, wind squalls, fair; 12-15, gales, pleasant; 16-19, unsettled; 20-23, warmer, stormy; 24-27, clearing; 28-30, summer weather, storms.



HAY

Mechanical hay dryers are trimming the feed budget and taking the guesswork out of haymaking on three Sibley County, Minnesota, dairy farms.

August Asmus, William Russell and Winifred Glaeser say that by having drying units in their hay mows, they find it unnecessary to buy protein supplement for the dairy cows.

The reason, they all agree, is that by using a dryer, they save more of the hay leaves and keep the hay at higher quality—high enough so that cows need only silage and ground corn and oats to balance out the ration. They also point out that hay dryers are good insurance against poor drying weather.

All three farmers use the same type drying unit and all have used hay dryers for five or more years.

Each of the drying units includes a 5-horsepower electric motor, a 42-inch fan, and an A-shaped wind duct, about 6 feet high, 6 feet wide, pointed at the top and slatted along the sides so the air can blow out into the hay. The fan is at one end of the barn and blows unheated air into the duct.

Reason for a hay dryer is so the hay can be hauled into the barn when it's still "tough," containing about 35-40 per cent

moisture. Then the leaves won't shatter and the valuable protein in the leaves is saved for the cows to eat. The dryer then reduces the moisture content until it's safe for storage.

How does a farmer put up hay with this system? Asmus says he does it this way: "We cut the hay in the morning, rake it into windrows, then let the hay wilt until the following morning. We start chopping between 7 and 8 a.m., when the dew is still on the hay. If you wait until afternoon when the hay is dry, the leaves will shatter and you're no better off than if you had put it up without a dryer."

Asmus says with second or third-crop alfalfa, it's often possible to cut the hay in the morning and haul it in during the afternoon.

You can't fill the whole barn at once with moist hay and get it dry, Asmus points out. "We usually put in 5-6 acres daily for a few days, then slow down until that's dried. It takes a week or more of running the fan continually to dry one 6-foot layer of hay."

After you've finished drying the hay, it's important to check for damp spots that may heat later on. He starts the fan, then walks over the top of the hay. If any of the air

DRYERS REDUCE FEED COSTS

coming through the hay is warm, it means there's an area that is heating and it's necessary to run the fan until it's dry. He checks his hay several times this way.

Asmus sees several advantages in chopping and drying hay, compared to baling. "The chopped and dried hay is higher in quality and the cows like it better. In fact, the cows eat the dried hay so well that we hardly ever need to clean out the mangers. They just don't leave any of it."

Asmus and the other two farmers say electricity for drying costs about 75-80 cents per ton of hay. Chopping and drying together cost no more than baling the same amount of hay.

Russell and Glaeser use a slightly different hay harvesting system. They cut the hay in the afternoon or evening, then start chopping the next morning after the dew is off, but before the leaves are dry enough to shatter.

Russell dries one-third of a barnful at a time. He puts in a layer about 6 feet deep, dries it for a week or more, puts in another layer and dries it, then puts in a third layer.

He believes that it takes up to a third less hay for a given size herd with the chopping-drying system than it does by baling. "That's because drying saves more leaves than baling and the cows eat the hay better; they never leave any." He gets all

the hay needed for his 14 milk cows from three cuttings from 10 acres of alfalfa-brome. He feeds corn silage, but normally gives the cows no protein concentrate.

The entire drying unit cost around \$1,000 and it's more than paid for itself since he put it in six years ago. Glaeser and Asmus say their units cost even less.

Glaeser and his son Dean follow a harvesting pattern similar to that used by Russell, but they have added one feature to their barn to give better hay distribution. They have suspended a round baffle—a conical-shaped metal device about three feet in diameter—from the hay fork track at the peak of the barn. They aim the blower at the baffle, which deflects the chopped material and spreads it around the hay mow. This baffle can be moved along the track to distribute hay over any section of the dryer.

The Glaesers have a duct 30 feet long and dry hay only in a 36-foot section of the mow. Their barn is 40 feet wide and they say that they have no trouble getting the hay dry along the sides.

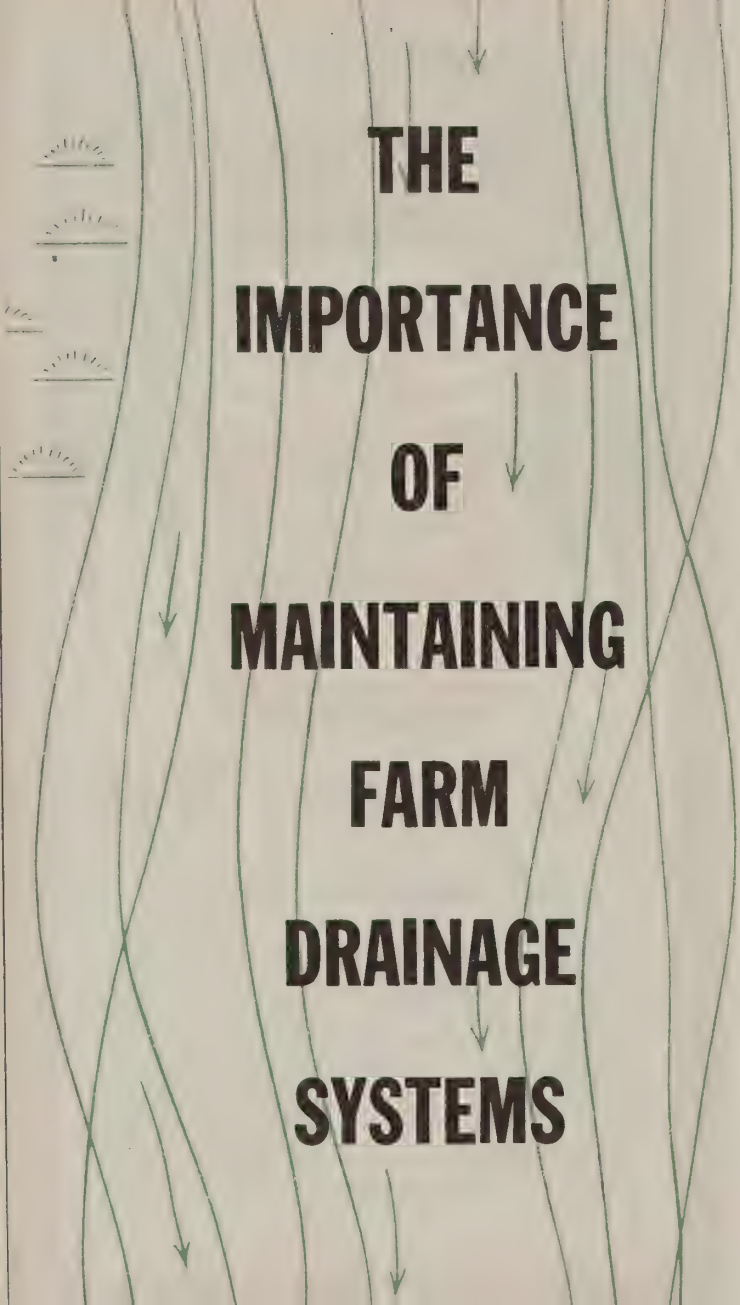
They say it's important to distribute the hay well, run the dryer long enough, and to check the hay for heated areas later on. If you get careless, some of the hay will mold and cattle will refuse to eat it.

CITIES SERVICE PREMIUM ANTI-FREEZE



make your radiator **SAFE**
all winter long

Fill your car radiator with PREMIUM ANTI-FREEZE (Permanent Type) before the first freeze, and make sure of SAFE, winterlong protection. No loss by evaporation . . . anti-foaming . . . special inhibitors help prevent rust and corrosion . . . guaranteed to protect *the entire cooling system*. Your Cities Service representative will tell you the right amount to use.



THE IMPORTANCE OF MAINTAINING FARM DRAINAGE SYSTEMS

Farm drainage systems must be kept in good condition if they are to do an efficient job, especially in areas where a high percentage of the farm land has some artificial drainage. If drainage systems get in bad condition, the damage to land and crops from one hard rain may be greater than the cost of an entire system.

The best time to inspect drainage systems is in October or November when needed repairs can be made before the fall and winter rains.

As far as open ditches are concerned, the farmer should be on the lookout for shoals, bars, and other obstructions. Brush should be cleared, and a chemical spray program conducted the following year. A brush-filled ditch may be only 50 per cent as efficient as a clean, open ditch. Banks, berms, and inside slopes should be seeded to grass.

Open ditches should be pastured by cattle only when the banks are not wet and muddy. All stock should be kept out after a period of heavy rain or freezing weather. Hogs should be kept out at all times.

Check for erosion on banks where surface water enters. A concrete structure or grass chute should be considered to solve such an erosion problem. When fences cross open ditches, free-swinging water gates are needed so that trash will not accumulate and clog the ditch.

When open ditches need a general clean-out, the cooperation of all farmers in the drainage area may be needed.

Inspection and prompt repair of tile failures will not only keep tile systems in good working order but will prevent permanent

damage to the entire system.

Any breaks or suckholes in the tile system should be repaired at once. Breathers or vents should be installed at the top of a steep section of the main and about every one-fourth mile on long mains. Breathers or vents improve the operation of the system, mark the location of the tile line, and serve as inspection holes. The top of the vent should be one foot above ground and covered with wire mesh.

Since tree roots will clog tile lines, all water-tolerant trees such as willows, elms, and cottonwood within 75 feet of the tile line, should be removed.

Faster drainage will result if ponded areas are drained with shallow ditches. Open surface inlets to tile should be used only as a last resort because they overload the tile line and let silt and trash in. Small depressions that cannot be drained by shallow ditches, can be drained by using blind inlets such as backfilling the tile trench in low spots with corncobs.

The tile line outlet should be protected against washout and erosion. If there is no surface water to contend with, a section of metal pipe can be used. Where surface water and tile water discharge at the same location, a well-designed structure is needed. The end of the tile outlet should be covered with a free-swinging metal gate or removable iron rods to keep out small animals.

A location map of the tile system will help save many times its cost by helping the farmer locate breaks and stoppages. The map will also serve as a record for any future owners of the farm.

FIGHTING JOHNSON GRASS



Johnson grass is Public Enemy Number One when it comes to weeds. It is officially outlawed by many states and every farmer is urged to do his best to eradicate it.

The first move is to catch it early before it spreads over the whole farm. A couple of chemical treatments may clean it up although the most effective chemical for killing Johnson grass is equally poisonous to corn and soybeans. But it pays, at the sacrifice of a little of the crop, to eradicate even the smallest patch of Johnson grass.

The stems of Johnson grass, coming up from underground rootstocks during the early summer, look a lot like small corn plants a few inches to more than a foot tall. They also look much like Sudan grass, especially as the stems often grow taller and much thinner than corn stalks.

Along in July and August, the grass will develop a spreading type of head bearing seeds with a purple tinge.

Unless controlled, Johnson grass will take over a whole field or farm. Originally the invader may have started from seed brought on to the farm in forage grass, alfalfa, or lespedeza seed. Or it may have come in on someone's combine or other farm machinery. It is also spread by cultivation. Pieces of roots are cut off and dragged by machinery to start new patches in the field or other parts of the farm.

Poison treatments are most effective when the plants are 12 to 18 inches tall. Dalapon is the most effective and cheapest chemical for this purpose.

Two sprayings with one pound of the chemical in 4 gallons of water are recommended. The farmer can concentrate on large spots of Johnson grass with the tractor sprayer or on small ones with a hand sprayer.

It may cost up to \$30 or \$40 an acre in chemicals to eradicate Johnson grass but it is worth the cost to keep it from spreading.

Whether fighting the Number One enemy weed with chemicals or by special crop rotations, the farmer is advised to watch for the first sign of the invader and keep well informed on ways to combat it promptly.

Pushing or kicking stalks through clogged rolls of a corn picker that is running, is riskier than taking an afternoon stroll on a freeway. Even using a stick to clean the rolls is dangerous—the rolls move so fast and are so powerful that sometimes they may pull the stick through and the operator's hand with it before he can turn loose. There is only one safe way to clean clogged rolls and that is to stop the machine and then unclog it with perfect safety.

CITIES SERVICE RADIATOR STOP-LEAK

Quick
Repairs
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Leaks



A concentrated liquid chemical sealer that quickly repairs small leaks in radiators, water jackets, and engine blocks. Makes a tough, long-lasting, water-tight seal. Contains a rust or corrosion inhibitor that minimizes clogging of the cooling system. Harmless to thermostat, gaskets, and hose connections. Can be used with any standard anti-freeze.

ANHYDROUS AMMONIA

the number 1 nitrogen fertilizer

In 10 short years, anhydrous ammonia has become the American farmer's No. 1 nitrogen fertilizer choice. Today, more than 30 per cent of all the commercial nitrogen used in direct application is in the form of anhydrous ammonia.

Several factors contribute to the popularity of the gaseous form of nitrogen. First, anhydrous ammonia contains the highest concentration of nitrogen — 82 per cent — of all fertilizing materials. Contributing factors are the immediate availability of anhydrous ammonia; economy; ease of handling; and development of adequate supplies through a nationwide system of manufacture and distribution.

Anhydrous ammonia is generally applied through a soil knifing device or in irrigation water. It is stored under pressure in tanks, from which applying machines are filled much as gasoline tanks are filled at service stations.

Since the application of anhydrous ammonia is a mechanical process, requiring far less labor than other forms of nitrogen fertilizer, it lends itself extremely well to modern agriculture. Application is on a custom basis in some areas, but thousands of farmers own applying machinery in both

pull-type and tractor-mounted models.

The action of anhydrous ammonia in the soil starts a relatively simple form of soil chemistry. As it is released by the soil knife four to six inches underground, anhydrous ammonia unites almost instantly with other soil elements to form inorganic ammonium salts which are immediately available to the plants.

These salts unite in solution form with soil particles, some of them changing to nitrate and nitrite forms, also used by plants. Since the ammonium salts are released for use as soil temperatures rise, fall-applied ammonia stays in the ground during the winter and becomes available as plant roots become active in the spring.

Fall applications are effective means of turning organic crop residues into usable inorganic chemical substances by stimulating activity of soil bacteria and enzymes to form plant nutrients for spring growth.

Fall-seeded fields of cereal grains are also aided by pre-plant applications of anhydrous ammonia. Root development is stimulated and winter kill is avoided. In addition, anhydrous ammonia gets many of the thousands of acres of small-grain fields used for fall grazing off to fast starts and helps save winter feed bills.

In the spring, pre-plant applications of anhydrous ammonia are used in fields which did not get fall applications in preparation for spring-planted rowcrops or small grains — and small-grain fields get crossrow applications to stimulate them for heavier early grazing and grain yields.

During the side-dressing season, the applicator knives are set to put the ammonia just outside and below the root zones of the growing plants to give the extra stimulus needed during the fruiting stage.

Still another application method for anhydrous ammonia is the sod-seeder, which puts seed and fertilizing materials into either growing or winter-dormant sods. This method of application gives emphasis to the words of agronomists, who say that the greatest undeveloped field for increasing the nation's food potential by use of fertilizers is in forage crops.

Cities Service Company has two subsidiaries in anhydrous ammonia manufacturing and distribution: MidSouth Chemical Corporation, the nation's largest distributor of anhydrous ammonia, which uses the brand name "Big N"; and Petroleum Chemicals, Inc., which is building a large plant in the southern part of the United States.

SILAGE IN PLASTIC BAGS

Silage kept in plastic bags stays higher in quality than in most conventional upright silos, University of Minnesota researchers have found.

Rodney Briggs, University of Minnesota agronomist, reports that in tests with alfalfa silage in plastic bags at the North Central Experiment station, Grand Rapids, total dry matter losses averaged only 5 per cent. Also there was no surface spoilage and none of the silage from the plastic bag needed to be discarded; it was all fed.

Briggs points out that surface spoilage ranges from 5 per cent in the best upright silos to as high as 50 per cent in outdoor bunker silos and stacks.

Spoilage was even lower in corn silage kept in plastic bags at the Rosemount and Waseca Experiment stations. At Rosemount, dry matter loss in corn silage was 1 per cent and loss was only .3 per cent at Waseca. There was no juice loss in plastic silos at either of these stations.

Briggs says the reason for low losses with plastic silos is that the bags are completely airtight. And with positive air control, the plant respiration shortly after putting up the silage uses up the remaining oxygen rapidly. With no further source of air, oxidation stops and there's little chance for

any great amount of spoilage.

Plastic films have the same advantages when used as covers in upright, bunker or trench silos. C. K. Otis and R. C. Lin, University agricultural engineers, have found that visible losses in upright silos can be reduced to less than 1 per cent if plastic caps are used.

Plastic silos aren't intended to replace conventional silos. But they do fit in well for storing extra silage, for pasture clippings, or to take care of temporary increases in sheep or beef cattle.

Plastic liners normally come in two sizes: 22 feet long by 55 feet in circumference (capacity 35 tons), and 27 feet long by 63 feet in circumference (70 tons capacity).

No special site requirements are necessary for plastic lined silos, so they can always be placed convenient to buildings and feed lots.

To save a lot of time in corn picking, be sure to adjust the snapping rolls for the size and condition of the corn to be picked. Read the instruction manual carefully and then be sure to see that you are following recommendations for adjustment of power take-off, gathering chains and other revolving parts. And practice safety always.

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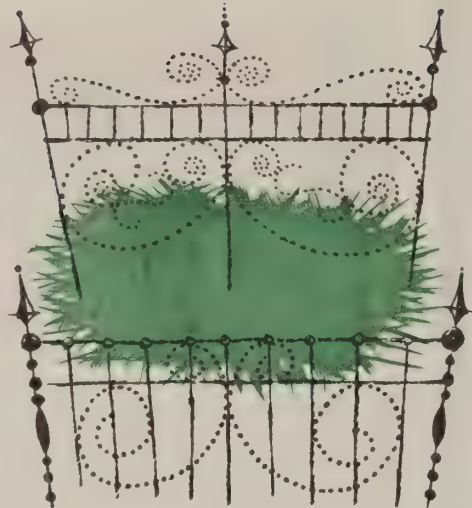
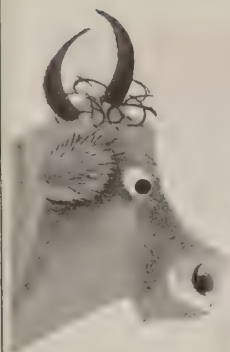
July

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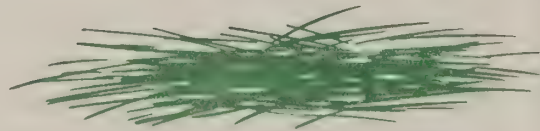
	EASTERN	CENTRAL	MOUNTAIN	PACIFIC
F. M.	1 10 4 M	1 00 4 M	30 11 04 A	30 10 04 A
L. Q.	8 7 21 A	8 6 21 A	8 5 21 A	8 4 21 A
N. M.	16 1 33 A	16 0 33 A	16 11 33 M	16 10 33 M
F. Q.	23 9 19 M	23 8 19 M	23 7 19 M	23 6 19 M
F. M.	30 11 47 M	30 10 47 M	30 9 47 M	30 8 47 M

Day of Month	Day of Week	Moon's Signs	Latitude of Northern States				SLOW	Latitude of Middle States				Latitude of Southern States			
			Sun rises	Sun sets	Moon rises	M		Sun rises	Sun sets	Moon rises	M	Sun rises	Sun sets	Moon rises	M
1	Tu	☾	4 25	7 41	7 52	4	4	4 30	7 36	7 48	4	4 55	7 12	7 30	3
2	We	☾	4 26	7 41	8 33	4	4	4 31	7 36	8 29	4	4 56	7 12	8 14	4
3	Th	☾	4 27	7 41	9 9	4	4	4 32	7 36	9 6	4	4 56	7 12	8 54	4
4	Fr	☾	4 27	7 41	9 40	4	4	4 32	7 36	9 38	4	4 57	7 11	9 30	4
5	Sa	☾	4 28	7 41	10 10	4	4	4 33	7 35	10 9	4	4 57	7 11	10 5	4
27. Day's length 15h. 12m. 15h. 2m. 14h. 13m.															
6	Su	☾	4 28	7 40	10 38	5	4	4 33	7 35	10 37	4	4 58	7 11	10 37	4
7	Mo	☾	4 29	7 40	11 5	5	4	4 34	7 35	11 6	4	4 58	7 11	11 9	4
8	Tu	☾	4 30	7 40	11 33	5	4	4 35	7 34	11 34	4	4 59	7 11	11 41	4
9	We	☾	4 30	7 39	morn	5	4	4 36	7 34	morn	4	4 59	7 10	morn	4
10	Th	☾	4 31	7 39	12 4	5	4	4 36	7 33	12 6	5	0 7	10	12 16	4
11	Fr	☾	4 31	7 38	12 37	5	4	4 37	7 33	12 39	5	0 7	10	12 54	4
12	Sa	☾	4 32	7 38	1 13	6	4	4 38	7 33	1 17	5	1 7	10	1 33	4
28. Day's length 15h. 4m. 14h. 54m. 14h. 8m.															
13	Su	☾	4 33	7 37	1 56	6	4	4 38	7 32	1 59	5	1 7	9	2 18	4
14	Mo	☾	4 34	7 37	2 44	6	4	4 39	7 32	2 48	5	2 7	9	3 8	4
15	Tu	☾	4 34	7 36	3 39	6	4	4 40	7 31	3 43	5	2 7	9	4 2	4
16	We	☾	4 35	7 36	sets	6	4	4 41	7 31	sets	5	3 7	8	sets	4
17	Th	☾	4 36	7 35	7 58	6	4	4 41	7 30	7 56	5	4 7	8	7 42	4
18	Fr	☾	4 37	7 34	8 34	6	4	4 42	7 29	8 35	5	4 7	8	8 23	4
19	Sa	☾	4 38	7 34	9 10	6	4	4 43	7 29	9 5	5	5 7	7	9 4	4
29. Days' length 14h. 54m. 14h. 44m. 14h. 1 m.															
20	Su	☾	4 39	7 33	9 44	6	4	4 44	7 28	9 44	5	6 7	7	9 43	4
21	Mo	☾	4 40	7 32	10 18	6	4	4 45	7 27	10 18	5	6 7	6	10 22	4
22	Tu	☾	4 41	7 31	10 53	6	4	4 45	7 27	10 55	5	7 7	6	11 4	4
23	We	☾	4 42	7 30	11 32	6	4	4 46	7 26	11 35	5	7 7	5	11 47	4
24	Th	☾	4 43	7 29	morn	6	4	4 47	7 25	morn	5	8 7	5	morn	4
25	Fr	☾	4 44	7 28	12 14	6	4	4 48	7 24	12 17	5	8 7	4	12 33	4
26	Sa	☾	4 45	7 27	1 1	6	4	4 49	7 23	1 4	5	9 7	3	1 23	4
30. Day's length 14h. 40m. 14h. 32m. 13h. 53m.															
27	Su	☾	4 46	7 26	1 53	6	4	4 50	7 22	1 57	5	10 7	3	2 17	4
28	Mo	☾	4 47	7 25	2 49	6	4	4 51	7 21	2 52	5	11 7	2	3 14	4
29	Tu	☾	4 48	7 24	3 51	6	4	4 51	7 21	3 54	5	11 7	1	4 13	4
30	We	☾	4 49	7 23	4 52	6	4	4 52	7 20	4 55	5	12 7	0	5 11	4
31	Th	☾	4 50	7 22	5 55	6	4	4 53	7 19	5 57	5	13 6	59	6 9	4

WEATHER PREDICTIONS—1-3, unsettled, fair; 4-7, fair, storms, clear; 8-11, gales, storms, fair; 12-15, fair; 16-19, cloudy, storms, fair; 20-23, storms; 24-27, fair, storms; 28-31, unsettled, storms.



BETTER BEDDING FOR DAIRY CATTLE



Types of bedding materials available for Iowa dairy herds have changed in recent years. Changes in methods of harvesting small grains and in the acreages of small grains planted have resulted in less straw being available for bedding material. And many other materials are being used as bedding for dairy cattle.

Other states report studies showing that wheat and oat straw are still the cheapest bedding for areas where small grains are grown, but wood shavings, ground or crushed corncobs, chopped or shredded cornstalks, wood chips and rubber mats have also been reported as useful bedding materials where straw is scarce.

Cows can be kept clean and high-quality milk produced on any of these materials—although there is some disagreement as to comfort. There is also a large difference in the cost per stall per day for different bedding. Some materials may not be available in certain areas of the country regardless of cost.

How practical are some of these new bedding materials? Studies were made of six types of bedding materials: oat straw, wood shavings, sawdust, ground corncobs, corn husks, and wood chips. Three cows were assigned to each group. A comparison was made as to: (1) pounds of bedding used per stall per day, (2) how well the bedding stayed on the stall platform, (3) cleanliness of cows, (4) absorptive quality of each

type of bedding, (5) ease of handling the materials, and (6) health and apparent comfort of the cows.

A comparison was also made of the use of straw, wood shavings, ground and whole corncobs, and wood chips as bedding materials under loose-housing conditions.

Cows kept reasonably clean with all the bedding materials used. Wood shavings, sawdust, and corncobs were much more absorptive than oat straw or corn husks and somewhat more absorptive than the wood chips and shavings mixture.

A marked difference was found between materials in the pounds of bedding needed per stall per day and in the amount of bedding retained on the stall. Oat straw seemed to have an advantage here. Actually, a higher percentage of the original straw bedding had to be replaced daily than did any of the other materials except wood chips and corn husks. It was difficult to keep the cows properly bedded with corn husks.

Wood shavings were included in the bedding with wood chips because the wood chips alone were so coarse as to endanger the health of the cows' udders. Initial bedding needs for wood shavings, sawdust, corncobs, and wood chips were higher than those for the lighter oat straw and corn husks. But corn husks, wood chips and oat straw showed high daily bedding requirements.

From the standpoint of ease of handling

the materials, wood shavings, sawdust, and wood chips were easy and pleasant to handle. And oat straw and corncobs were somewhat easier to handle than corn husks.

The cattle seemed comfortable on all types of bedding materials except corncobs. Two of the three cows on corncobs were obviously uncomfortable and showed some lameness after 2 or 3 days. One lame cow was removed and replaced and the cows on cobs were switched with those on sawdust. The cow that was tenderfooted on the cobs soon was walking normally after going on sawdust. None of the cows switched from sawdust to cobs showed any lameness although they seemed to want to stand in the gutter rather than on the stall platform.

While the cows on wood chips did not appear uncomfortable, they did scrape more of the bedding off the platform into the gutter than did cows on any of the other materials. This was probably because the chips were light and more easily scattered.

In addition to the lameness of the cows on cobs, there were some minor injuries in each group of cows. All were cases of hocks becoming rough, raw hocks, or some puffiness of hocks.

In loose-housing, oat straw and wood shavings are known to be satisfactory bedding materials. Tests were tried using whole cobs and wood chips as bases for straw and shavings in bedding yearling heifers. The wood chips gave a firmer bed for straw and

shavings early in the fall, and the heifers seemed to prefer lying down on the chips rather than on the cobs. The cobs tended to roll out some from the front of the shed before the bedding piled up. However, they provided a cleaner bed for the heifers before a pack of straw or shavings and manure had been established.

After the manure pack had been established, there was no difference in the cleanliness or comfort of the heifers where either cobs or chips were used as a base for straw bedding. The use of cobs or chips as a base made it easier to clean out the shed than where shavings or straw had been used directly on top of the ground. Also more of the liquid portion of the manure was saved when a base was used.

Ground corncobs performed somewhat better than whole corncobs in another loose-housing test. The ground corncobs provided a firmer base during the early fall than did the whole cobs.

In general, where sawdust is available, it will make a satisfactory bedding. Corn husks are also satisfactory although they are somewhat harder to handle than the other materials. Because of the additional expense of obtaining wood chips, the need for grinding corncobs and the apparent discomfort of the cows, these materials are probably the least desirable of those studied.

—By C. F. Foreman and A. R. Porter,
Iowa Farm Science, Iowa State College

CITIES SERVICE

PREMIUM COOLING SYSTEM CLEANER WITH DETERGENT



This CLEANER quickly breaks down hard formations of rust, scale, or corrosion — so they can easily be flushed out of the cooling system. The detergent (used after cleaning) inhibits clogging of radiator cores and small water passages and helps prevent over-heating. Easy to use — just follow directions. Harmless to all cooling system parts.

powerful fast-acting acid type

DISSOLVES or LOOSENS

RUST or SCALE

TRACTOR LUBRICATION CHART

KEY TO CHART REFERENCES

10W	C310, Koolmotor or Trojan Motor Oil SAE 10W	50	C350, Koolmotor or Trojan Motor Oil SAE 50	520	C-500 Series Oil SAE 20-20W
20, 20W	C320, Koolmotor or Trojan Motor Oil SAE 20-20W	5W-20	5D Koolmotor SAE 5W-20	530	C-500 Series Oil SAE 30
30	C330, Koolmotor or Trojan Motor Oil SAE 30	10W-30	5D Koolmotor SAE 10W-30	80	Trojan Gear Oil SAE 80
40	C340, Koolmotor or Trojan Motor Oil SAE 40	310	C-300 Series Oil SAE 10W	90	Trojan Gear Oil SAE 90
		320	C-300 Series Oil SAE 20-20W	140	Trojan Gear Oil SAE 140
		330	C-300 Series Oil SAE 30	250	Trojan Gear Oil SAE 250
		340	C-300 Series Oil SAE 40	80MP	Trojan MP or LB Gear Oil SAE 80
		510	C-500 Series Oil SAE 10W	90MP	Trojan MP or LB Gear Oil SAE 90
				140MP	Trojan MP or LB Gear Oil SAE 140

MAKE and MODEL		CRANKCASE				TRANS. and DIFF.			FINAL DRIVE		
		Lowest Anticipated Temperature				Cpt'y			Capacity Each Unit		
		Above 90°F.	+32°F.	+10°F.	-10°F.	Above +32°F.	Below +32°F.	Below +32°F.	Above +32°F.	Below +32°F.	Below +32°F.
ALLIS-CHALMERS	Qt.	SAE	SAE	SAE	SAE	Pt. or Lb.	SAE	SAE	Pt. or Lb.	SAE	SAE
Wheel Type											
B.....	.4	30	20, 20W	20W	10W ¹	12 ²	20W	20W	1½	20W	20W
C.....	.4	30	20, 20W	20W	10W ¹	12 ²	20W	20W	1½	140	90
CA.....	.4	30	20, 20W	20W	10W ¹	17½	10W ³	10W	1½	20W	20W
D14.....	.4	30	20W	10W	10W	29	80MP	80MP	1¼	20W	20W
G.....	.3	30	20W	20W	10W ¹	16	20W	20W	—	—	—
RC.....	.4	30	20W	20W	10W ¹	4	140	90	1	250	140
U.....	.10	40	30	20W	10W ¹	96	140	90	—	—	—
UC.....	.10	40	30	20W	10W ¹	96	140	90	4	140	90
WC.....	.6	40	20W	20W	10W ¹	4	140	90	1	250	140
WD.....	.6	40	20, 20W	20W	10W ¹	34 ⁵	80MP	80MP	3½	80MP	80MP
WD-45.....	.6	40 ¹	20, 20W ¹	20W ¹	10W ¹	34	80MP	80MP	3½	80MP	80MP
WD-45 (Diesel).....	.6	330 ⁶	320 ⁶	320 ⁶	310 ⁶	34	80MP	80MP	3½	80MP	80MP
Crawler Type; Diesel Engine											
HD-5.....	.87	330	330	320	310 ¹	40	50	30	24	50	30
HD-6, HD-6B.....	.107	340 ⁸	330 ⁸	320 ⁸	310 ^{1 8}	40	50	30	24	50	30
HD-7.....	.11	330	330	320	310 ¹	52	50	30	14	50	30
HD-9.....	.167	330	330	320	310 ¹	54	50	30	26	50	30
HD-10.....	.13	330	330	320	310 ¹	56	50	30	16	50	30
HD-11.....	.157	340 ⁸	330 ⁸	320 ⁸	310 ^{1 8}	54	50	30	26	50	30
HD-14.....	.14	330	330	320	310 ¹	80	50	30	16	50	30
HD-14C.....	.14	330	330	320	310 ¹	80	50	30	16	50	30
HD-15.....	.207	330	330	320	310 ¹	68	50	30	44	50	30
HD-16, HD-16A.....	.307	340 ⁸	330 ⁸	320 ⁸	310 ^{1 8}	68	50	30	44	50	30
HD-16AC, HD-16C.....	.307	340 ⁸	330 ⁸	320 ⁸	310 ^{1 8}	64	50	30	44	50	30
HD-19, HD-19-H.....	.207	330	330	320	310 ¹	78	50	30	60	50	30
HD-20-H.....	.337	330	330	320	310 ¹	78	50	30	60	50	30
HD-21.....	.307	340 ⁸	330 ⁸	320 ⁸	310 ^{1 8}	78	50	30	60	50	30
J. I. CASE											
C.....	.7	30	20, 20W	20W	10W	72, 84	140	90	—	—	—
CC.....	.7	30	20W	20W	10W	84	140	90	—	—	—
D, DC, DC-4, DI, DO...7	30	20W ⁹	10W	10W ⁹	10W ⁹	80, 84	90	90 ¹⁰	—	—	—
DS.....	.7	30	20W ⁹	10W	10W ⁹	80, 84	90	90 ¹⁰	12	90	90
LA, LAI.....	.121 ¹¹	30	20W ⁹	10W	10W ⁹	136	90	90 ¹²	—	—	—
R, RC, RH.....	.5	30	20, 20W	20W	10W	72	140	90	—	—	—
S, SC, SO.....	.5	30	20W ⁹	10W	10W ⁹	72, 86	90	90 ¹⁰	—	—	—
V, VC, VO.....	.4	30	20, 20W ¹⁴	20W	10W	40 ¹⁵	140	90	—	—	—
VA, VAC, VAI, VAO....4	30	20W ¹⁴	10W	10W ¹⁴	10W ¹⁴	56 ¹⁵	90	90	—	—	—
VAH, VAS.....	.4	30	20W ¹⁴	10W	10W ¹⁴	22 ¹⁵	90	90	3	90	90
VAIW.....	.4	30	20W ¹⁴	10W	10W ¹⁴	44 ¹⁵	90	90	—	—	—

(continued on next page)

300, 310 Spark Ignition..417	301 ³	20W ^{13 14}	10W ¹³	10W ^{13 14}	34 ¹⁸	90MP	90MP ¹⁶	—	—	—
301, 311 Spark Ignition..417	301 ³	20W ^{13 14}	10W ¹³	10W ^{13 14}	56 ¹⁸	90MP	90MP ¹⁶	—	—	—
300 (Diesel).....5	330 ¹³	330 ¹³	320 ¹³	310 ¹³	34 ¹⁸	90MP	90MP ¹⁶	—	—	—
310 (Diesel).....4	330 ¹³	330 ¹³	320 ¹³	310 ¹³	56 ¹⁸	90MP	90MP ¹⁶	—	—	—
400 Series.....8	301 ³	20W ^{9 13}	10W ¹³	10W ^{9 13}	120 ¹⁹	90	90 ²⁰	—	—	—
400 Series High										
Clearance.....8	301 ³	20W ^{9 13}	10W ¹³	10W ^{9 13}	120 ¹⁹	90	90 ²⁰	9	90	90
500 Series.....12 ¹¹	301 ³	20W ^{9 13}	10W ¹³	10W ^{9 13}	126	90	90 ¹²	—	—	—
600 Series.....12 ¹¹	301 ³	20W ^{9 13}	10W ¹³	10W ^{9 13}	128	90	90 ¹²	—	—	—

CATERPILLAR

D2 Series 4U1, 5U1....147	530 ²¹	530 ²¹	510 ²¹	510 ^{21 22}	16	90 ²³	80 ²³	9	90 ²³	80 ²³
D4 Series 6U1, 7U1....157	530 ²¹	530 ²¹	510 ²¹	510 ^{21 22}	32	90 ²³	80 ²³	14 ²⁴	90 ²³	80 ²³
D2 Early Models,										
Series 3J1, 5J1.....157	530 ²¹	530 ²¹	510 ²¹	510 ^{21 22}	16	90 ²³	80 ²³	8	90 ²³	80 ²³
D4 Early Models, Series										
4G1, 7J1, 2T1, 5T1...177	530 ²¹	530 ²¹	510 ²¹	510 ^{21 22}	40	90 ²³	80 ²³	14	90 ²³	80 ²³
D6 Series 8U1, 9U1....227 ²⁵	530 ²¹	530 ²¹	510 ²¹	510 ^{21 22}	84	90 ²³	80 ²³	26 ²⁶	90 ²³	80 ²³
D7 Series 7M1, 3T1....227 ²⁵	530 ²¹	530 ²¹	510 ²¹	510 ^{21 22}	86, 80	90 ²³	80 ²³	46, 44	90 ²³	80 ²³
D7 Series 17A1-17A5064.227 ²⁵	530	530	510	510 ²²	88	90 ²³	80 ²³	46	90 ²³	80 ²³
D7 Series 17A5065.....24½	530	530	510	510 ²²	88	90 ²³	80 ²³	46	90 ²³	80 ²³
D8 with Oil Cooler.....29,347 ²⁵	530 ²¹	530 ²¹	510 ²¹	510 ^{21 22}	80, 82	90 ²³	80 ²³	40	90 ²³	80 ²³
Without Oil Cooler.....277	530 ²¹	530 ²¹	510 ²¹	510 ^{21 22}	80	90 ²³	80 ²³	52	90 ²³	80 ²³
D8 Series 13A1.....347 ²⁵	530	530	510	510 ²²	82	90 ²³	80 ²³	40	90 ²³	80 ²³
D8 Series 14A1-14A4354,										
15A1-15A1851.....357 ²⁵	530	530	510	510 ²²	82, 70	90MP ^{23 27}	80MP ^{23 27}	40 ²⁸	90MP ^{23 27 28}	80MP ^{23 27 28}
D8 Series 14A4355,										
15A1852.....37½ ^{7 25}	530	530	510	510 ²²	82, 70	90MP ^{23 27}	80MP ^{23 27}	40 ²⁸	90MP ^{23 27 28}	80MP ^{23 27 28}
D9 Series 18A1-18A448,										
19A1-19A254.....367 ²⁵	530	530	510	510 ²²	120, 80	90MP ^{23 27}	80MP ^{23 27}	108	90MP ^{23 27}	80MP ^{23 27}
D9 Series 18A449,										
19A255.....38½ ^{7 25}	530	530	510	510 ²²	120, 80	90MP ^{23 27}	80MP ^{23 27}	108	90MP ^{23 27}	80MP ^{23 27}
DW10.....227	530 ²¹	530 ²¹	510 ²¹	510 ^{21 22}	148	90 ²³	80 ²³	—	—	—
DW15 Series to 70C487.337	530	530	510	510 ²²	148	90MP ^{23 27}	80MP ^{23 27}	—	—	—
DW15 Series 70C487 up.35½ ⁷	530	530	510	510 ²²	148	90MP ^{23 27}	80MP ^{23 27}	—	—	—
DW20 Series to 67C514..337	530	530	510	510 ²²	216 ²⁹	90MP ^{23 27}	80MP ^{23 27}	—	—	—
DW20 Series 67C514 up.35½ ⁷	530	530	510	510 ²²	216 ²⁹	90MP ^{23 27}	80MP ^{23 27}	—	—	—
DW21 Series to 69C890..337	530	530	510	510 ²²	216	90MP ^{23 27}	80MP ^{23 27}	—	—	—
DW21 Series 69C890 up.35½ ⁷	530	530	510	510 ²²	216	90MP ^{23 27}	80MP ^{23 27}	—	—	—
Gasolene Starting Engine (individual fill).....—	30	30	10W	10W ²²	—	—	—	—	—	—

COCKSHUTT, CO-OP

E-2, 20, Black Hawk 20..4½	330	320 ³⁰	310 ³⁰	310	32	90MP	90MP ³¹	3	90MP	90MP ³¹
E-3, 30.....5	330 ³²	330	320	310	41 ³³	90MP	90MP ³³	—	—	—
E-4, E-5, 40, 50, Black										
Hawk 40, 50.....6	330 ³²	330	320	310	77 ³⁴	90MP	90MP	—	—	—
35.....4¾	330	330 ^{32 35}	310	310	77 ³⁴	90MP	90MP ³³	—	—	—
40D4.....8½	330 ³²	320 ^{32 35}	310	310	77 ³⁴	90MP	90MP ³³	—	—	—

JOHN DEERE

A, AN, ANH, AW										
Prior to 1947.....117, 9	50 ³⁶	30 ^{36 37}	20W ³⁶	10W ³⁶	64	140	90	—	—	—
A, AN, AW, G, GN, GW										
1947 and after.....117	30 ³⁶	20, 20W ³⁶	10W ³⁶	10W ^{36 38}	56	90	90 ³⁹	—	—	—
AH, GH 1951 and after..117	30 ³⁶	20, 20W ³⁶	10W ³⁶	10W ^{36 38}	56	90	90 ³⁹	3½	140	90
AO, AR to 1949.....97	50 ³⁶	30 ^{36 37}	20W ³⁶	10W ^{36 38}	64	140	90	—	—	—
AO, AR 1949 and after..117	30 ³⁶	20 ³⁶	10W ³⁶	10W ^{36 38}	64	90	90 ³⁹	—	—	—
B, BN, BNH, BW										
Prior to 1947.....7, 7½ ⁷	50 ³⁶	30 ^{36 37}	20W ³⁶	10W ³⁶	36	140	90	—	—	—
B, BN, BW										
1947 and after.....7	30 ³⁶	20 ³⁶	10W ³⁶	10W ^{36 38}	36	90	90 ³⁹	—	—	—
D.....137	50 ³⁶	30 ^{36 37}	20W ³⁶	10W ^{36 38}	56 ⁴⁰	90	90 ³⁹	—	—	—
G, GN, GNH, GW										
Prior to 1947.....117	50 ³⁶	30 ^{36 37}	20W ³⁶	10W ³⁶	72	140	90	—	—	—
GM.....117	50 ³⁶	30 ^{36 37}	20W ³⁶	10W ³⁶	56	140	90	—	—	—
H, HN, HNH, HWH....4½ ⁷	50 ³⁶	30 ^{36 37}	20W ³⁶	10W ³⁶	24 ⁴¹	140	90	—	—	—
L Early Models.....2	30 ³⁶	30 ³⁶	10W ³⁶	10W ³⁶	3½	90	90 ⁴²	1½	90	90 ⁴²
L Late Models, LA.....3	30 ³⁶	30 ³⁶	10W ³⁶	10W ³⁶	3½	90	90 ⁴²	1½	90	90 ⁴²
M40H, 40S, 40V.....4					13	90	90 ⁴³	3½ ⁴⁴	90	90
MC40C.....4					13	90	90 ⁴³	1¾	90	90
MI.....4					13	90	90 ⁴³	3	90	90
MT40.....4	20	20	10W	10	15	90	90 ⁴³	4	90	90
40U, 40W.....4	10W-30	10W-30	5W-20	5W-20	13	90	90 ⁴³	2½	90	90
320S, 320U, 420S, 420V..4	36	36	36	36	18	90 ⁴⁵	90 ⁴³	3½	90	90
420C.....4					16	90 ⁴⁵	90 ⁴³	1¾	90	90
420H.....4					16	90 ⁴⁵	90 ⁴³	4	90	90

(continued on next page)

CRANKCASE

TRANS. and DIFF.

FINAL DRIVE

MAKE and MODEL

Cpt'y

Above
90°F.

Lowest Anticipated Temperature

+32°F.

+10°F.

-10°F.

Cpt'y

Above
+32°F.Below
+32°F.Capacity
Each
UnitAbove
+32°F.Below
+32°F.

420I, 420T.....4	20	20	10W	10	16	90 ⁴⁵	90 ⁴³	4	90	90
420U.....4	10W-30	10W-30	5W-20	5W-20	16	90 ⁴⁵	90 ⁴³	2½	90	90
420W.....4	36	36	36	36	19	90 ⁴⁵	90 ⁴³	7	90	90
R (Diesel).....13 ⁴⁶ 47	330 ⁴⁸	320 ⁴⁸	310 ⁴⁸	310 ⁴⁸	19	90	90 ³⁹	—	—	—
50 Series.....77					32,36 ⁵⁰	90 ⁵⁰	90 ³⁹ 50	—	—	—
60 Series.....87	30	20,20W	10W	10W	48,56 ⁵⁰	90 ⁵⁰	90 ³⁹ 50	—	—	—
60 Hi-Crop.....87	10W-30	10W-30	10W-30	10W-30	48,56 ⁵⁰	90 ⁵⁰	90 ³⁹ 50	3½	90	80
60 Orchard Standard....87	36	36	5W-20	5W-20	68 ⁵⁰	90 ⁵⁰	90 ³⁹ 50	—	—	—
70 Series, 70 Standard...117			36 49	36 49	60 ⁵⁰	90 ⁵⁰	90 ³⁹ 50	—	—	—
70 Hi-Crop.....117					60 ⁵⁰	90 ⁵⁰	90 ³⁹ 50	3½	90	80
70 (Diesel).....127 47	330 ⁴⁸	320 ⁴⁸	310 ⁴⁸	310 ⁴⁸	60 ⁵⁰	90 ⁵⁰	90 ³⁹ 50	—	—	—
80 (Diesel).....157 47	330 ⁴⁸	320 ⁴⁸	310 ⁴⁸	310 ⁴⁸	26 ⁵⁰	90 ⁵⁰	90 ³⁹ 50	—	—	—
60 Orchard, LP Gas....87					68 ⁵⁰	90 ⁵⁰	90 ³⁹ 50	—	—	—
520 Series.....77	20, 20W	10W	10W	5W	32 ⁵⁰	90 ⁵⁰	90 ³⁹ 50	—	—	—
620 Series.....87	10W-30	10W-30	10W-30	5W-20	48 ⁵⁰	90 ⁵⁰	90 ³⁹ 50	—	—	—
720 Series, except Diesel 127	36	36 51	36	36 52	64 ⁵⁰	90 ⁵⁰	90 ³⁹ 50	—	—	—
720 Series, Diesel.....97 47	320 ⁴⁸	310 ⁴⁸	310 ⁴⁸	310 ⁴⁸	64 ⁵⁰	90 ⁵⁰	90 ³⁹ 50	—	—	—
820 Diesel.....157 47	320 ⁴⁸	310 ⁴⁸	310 ⁴⁸	310 ⁴⁸	26	90	90 ³⁹	—	—	—

EARTH MASTER

C, D Series.....4	30,20,20W ⁵³	30,20,20W ⁵³	20,20W	20,20W ⁵⁴	5	140	90 ⁵⁵	2	140	90
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FATE-ROOT-HEATH

Silver King 3, 4, 5.....5	40	30	20W	10W	8	140MP	90MP	1½	250MP	140MP ⁵⁶
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FERGUSON

TO-20, TE-20.....6	30 ³⁶	20W ³⁶ 57	20W ³⁶	10W ³⁶	48	90 ⁵⁸	80	—	—	—
TO-30.....5	30 ³⁶	20W ³⁶ 57	20W ³⁶	10W ³⁶	48	90 ⁵⁸	80	—	—	—
TO-35, F-40.....5	30 ³⁶	20W ³⁶ 57	20W ³⁶	10W ³⁶	64	90 ⁵⁸	80	—	—	—
No. 11 Pony.....4	30	20,20W ⁵⁹	20,20W	10W	6	90	80	3½	90	80

FORD

2N, 8N, 9N.....5	30 ³⁶	20,20W ³⁶	20W ³⁶	10W ³⁶ 38	40	90MP	80MP	—	—	—
NAA.....5	30 ³⁶	20,20W ³⁶	20,20W ³⁶	10W ³⁶ 38	10 ⁶⁰	80MP	80MP	—	—	—
600, 800 Series.....4	30 ³⁶	20,20W ³⁶	20,20W ³⁶	10W ³⁶ 38	60 61	80MP	80MP	—	—	—
700, 900 Series.....4	30 ³⁶	20,20W ³⁶	20,20W ³⁶	10W ³⁶ 38	60 61	80MP	80MP	3	80MP	80MP
Fordson Major (Diesel)..87	340 ⁶²	330 ⁶²	320 ⁶²	310 ⁶² 63	64	90MP ⁶⁴	80MP ⁶⁴	—	—	—

INTERNATIONAL-McCORMICK

Wheel Type

A, AV, Super A, AV, AV-1.....5	30	20,20W ⁶⁵	10W	10W	8 ⁶⁶	80	80	2¾	80	80
B, BN, BV.....57	30	30	20W	10W	10	80	80	3	90	80
C, Super C.....5	30	20,20W ⁶⁵	10W	10W	38 ⁶⁷	80	80	—	—	—
Farmall Cub, Cub-Lo- Boy.....3	30	20,20W ⁶⁵	10W	10W	3½	80	80	1¾	80	80
F-20.....7	40	30	20W	10W	64	68	68	4	140 ⁶⁹	90
F-30.....7	40	30	20W	10W	56	68	68	4	140 ⁶⁹	90
H, Super H.....6	30	20,20W ⁶⁵	10W	10W	48	68	68	—	—	—
HV, Super HV.....6	30	20,20W ⁶⁵	10W	10W	48	68	68	6	80	80
M, Super M.....8	30	20,20W ⁶⁵	10W	10W ⁷⁰	104	68	68	—	—	—
MD, Super MD.....9	330 ⁷¹	320 ⁷¹ 72	310 ⁷¹	310 ⁷¹ 73	104	68	68	—	—	—
MDV, Super MDV.....9	330 ⁷¹	320 ⁷¹ 72	310 ⁷¹	310 ⁷¹ 73	104	68	68	6	80	80
Super MT-A.....8	30	20,20W ⁶⁵	10W	10W	120	68	68	—	—	—
Super MT-A (Diesel)....9	330 ⁷¹	320 ⁷¹ 72	310 ⁷¹	310 ⁷¹ 73	120	68	68	—	—	—
Super M-TA (high clearance).....8	30	20,20W ⁶⁵	10W	10W	120	68	68	6	80	80
Super M-TA (Diesel— high clearance).....9	330 ⁷¹	330 ⁷¹	310 ⁷¹	310 ⁷¹ 73	120	68	68	6	80	80
MV, Super MV.....8	30	20,20W ⁶⁵	10W	10W ⁷⁰	104	68	68	6	80	80
W-4, O-4, OS-4, I-4, Super W-4.....6	30	20,20W ⁶⁵	10W	10W	48	68	68	—	—	—
W-6, O-6, OS-6, I-6, Super W-6.....8	30	20,20W ⁶⁵	10W	10W	104	68	68	—	—	—
Super W6-TA.....8	30	20,20W ⁶⁵	10W	10W	120	68	68	—	—	—
Super W6-TA (Diesel)....9	330 ⁷¹	320 ⁷¹ 72	310 ⁷¹	310 ⁷¹ 73	120	68	68	—	—	—
W-9, WR-9, I-9, WR-9S.117	30	20,20W ⁶⁵	10W	10W	80	80	80	—	—	—
WD-6, ODS-6, ID-6, Super WD-6.....9	330 ⁷¹	320 ⁷¹ 72	310 ⁷¹	310 ⁷¹ 73	104	68	68	—	—	—
WD-9, WDR-9, ID-9, Super WD-9, WDR-9.117	330 ⁷¹	320 ⁷¹ 72	310 ⁷¹	310 ⁷¹ 73	80	80	80	—	—	—

100, 130 Hi-Clear, 100, 130.....	5	30	20,20W ⁶⁵	10W	10W	8 ⁶⁶	80	80	2¾	80	80
200, 230.....	5	30	20, 20W ⁶⁵	10W	10W	38 ⁶⁷	80	80	—	—	—
300, 350 Utility, 300, 350.6		30	20,20W ⁶⁵	10W	10W	56	68	68	—	—	—
300, 350 Hi-Clear.....	6	30	20,20W ⁶⁵	10W	10W	56	68	68	6	80	80
350 (Diesel) 350 Diesel Utility.....	5	330 ⁷¹	320 ⁷¹ 72	310 ⁷¹	310 ⁷¹ 73	56	68	68	—	—	—
400, 450, W-450.....	8	30	20,20W ⁶⁵	10W	10W ⁷⁰	120	68	68	—	—	—
400, 450 Hi-Clear.....	8	30	20,20W ⁶⁵	10W	10W ⁷⁰	120	68	68	6	80	80
400, 450 (Diesel).....	9	330 ⁷¹	320 ⁷¹ 72	310 ⁷¹	310 ⁷¹ 73	120	68	68	—	—	—
400, 450 (Diesel) Hi-Clear.....	9	330 ⁷¹	320 ⁷¹ 72	310 ⁷¹	310 ⁷¹ 73	120	68	68	6	80	80
600, 650 (Diesel).....	11	330 ⁷¹	320 ⁷¹ 72	310 ⁷¹	310 ⁷¹ 73	80	80	80	—	—	—
650.....	11	30	20,20W ⁶⁵	10W	10W	80	80	80	—	—	—

Crawler Type—Gasolene Engine

T6.....	97	30	20,20W	20,20W	10W	32	90MP	90MP ⁷⁴	2	90MP ⁷⁵	90MP ⁷⁴
T9.....	117	30	20,20W	20,20W	10W	44	90MP	90MP ⁷⁴	3	90MP ⁷⁵	90MP ⁷⁴

Crawler Type—Diesel Engine

TD-6.....	97	330 ⁷¹ 72	320 ⁷¹ 72	310 ⁷¹ 76	310 ⁷¹ 76	32	90MP	90MP ⁷⁴	2	90MP ⁷⁵	90MP ⁷⁴
TD-9.....	117	330 ⁷¹ 72	320 ⁷¹ 72	310 ⁷¹ 76	310 ⁷¹ 76	44	90MP	90MP ⁷⁴	3	90MP ⁷⁵	90MP ⁷⁴
TD-14, except Series 142.....	167	330 ⁷¹	320 ⁷¹	310 ⁷¹	310 ⁷¹	48	90	90 ⁷⁷	6	90	90 ⁷⁷
TD-14 Series 142.....	187	330 ⁷¹ 72	320 ⁷¹ 72	310 ⁷¹	310 ⁷¹ 76	58	90MP	90MP ⁷⁴	15	90MP ⁷⁵	90MP ⁷⁴
TD-14A, except Series 141.....	167	330 ⁷¹ 72	320 ⁷¹ 72	310 ⁷¹	310 ⁷¹ 76	48	90MP	90MP ⁷⁴	6	90MP ⁷⁵	90MP ⁷⁴
TD-14A Series 141.....	167	330 ⁷¹ 72	320 ⁷¹ 72	310 ⁷¹	310 ⁷¹ 76	48	90MP	90MP ⁷⁴	6	90MP ⁷⁵	90MP ⁷⁴
TD-18, except Series 182.....	267	330 ⁷¹	320 ⁷¹	310 ⁷¹	310 ⁷¹	60	90	90 ⁷⁷	11	90	90 ⁷⁷
TD-18 Series 182.....	267	330 ⁷¹ 72	320 ⁷¹ 72	310 ⁷¹	310 ⁷¹ 76	86	90MP	90MP ⁷⁴	20	90MP ⁷⁵	90MP ⁷⁴
TD-18A, except Series 181.....	267	330 ⁷¹ 72	320 ⁷¹ 72	310 ⁷¹	310 ⁷¹ 76	60	90MP	90MP ⁷⁴	11	90MP ⁷⁵	90MP ⁷⁴
TD-18A Series 181.....	267	330 71 72	320 ⁷¹ 72	310 ⁷¹	310 ⁷¹ 76	60	90MP	90MP ⁷⁴	10	90MP ⁷⁵	90MP ⁷⁴
TD-24.....	307	350 ⁷¹ 72	320 ⁷¹ 72	310 ⁷¹	310 ⁷¹ 76	384	30 ⁷⁸	30 ⁷⁸	18 ⁷⁹	90MP ⁷⁵	90MP ⁷⁴

MASEY-HARRIS

No. 11 Pony.....	4	30	20 ⁵⁹	20	10W	6	90	80	3½	90	80
No. 16 Pacer.....	3	30	20 ⁵⁹	10W	10W ⁸⁰	6	90	80	3½	90	90
20, 20K, 81, 82.....	4	30	20,20W	10W	10W	16 ⁸¹	90 ⁸²	90	—	—	—
22, 22K, Colt, Mustang..	4	30 ⁸³	20 ⁸³ ,10W	10W	10W	16 ⁸⁴	90MP	90MP	—	—	—
101, 102, RC, S Junior...	4	30	20	20	10W	48	140	90	—	—	—
101 RC, S Senior and Super.....	5	30	20	20	10W	48	140	90	—	—	—
102 RC, S Senior and Super.....	5	30	20	20	10W	48	140	90	—	—	—
202, 203, 204.....	6	40	30	20	10W	128	140	90	—	—	—
30, 30K.....	4	30 ⁸³	20 ⁸³ ,10W	10W	10W	104,96	90MP	90MP	—	—	—
33, 333 Gasolene, 333 LP-Gas, All Models...	7	30 ⁸³	20 ⁸³ ,10W	10W ⁸³	10W ⁸³	104,96	90MP	90MP	—	—	—
44, 44 Special, 444, All G, K, LP Models..	7	30 ⁸³	20 ⁸³ ,10W	10W ⁸³	10W ⁸³	104,96	90MP	90MP	—	—	—
44-6.....	5	30 ⁸³	20 ⁸³ ,10W	10W	10W	104	90MP	90MP	—	—	—
55, 55K, 55LP, 555 Gasolene and LP-Gas..	9	30 ⁸³	20 ⁸³ ,10W	10W ⁸³	10W ⁸³	136	90MP	90MP	—	—	—
33, 44, 44 Special, 333, 444, (Diesels).....	7	30 ⁸³	320 ⁸³ ,310	310 ⁸³	310 ⁸³	104,96	90MP	90MP	—	—	—
55, 555 (Diesel).....	9	30 ⁸³	320 ⁸³ ,310	310 ⁸³	310 ⁸³	138	90MP	90MP	—	—	—
MH-50.....	5	30	20 ⁵⁷	20	10W	64	90 ⁵⁸	80	—	—	—

MINNEAPOLIS-MOLINE

A (Avery), GG, GH (Cletrac).....	585	20,20W	20,20W	20W	10W	20 ⁸⁶	50	50	3	50	50
BF, BG, BGH.....	5	20,20W	20,20W	20W	10W	18 ⁸⁶	50	50	3	50	50
G, GB, GTA, U, UB, UTIL except Diesel...	97	30 ³⁶	30 ³⁶	20 ³⁶	10W ³⁶	104 ⁸⁷	140MP ⁸⁷	90MP ⁸⁷	—	—	—
G, GBD (Diesel).....	14 ⁸⁸	330	330	320W	310	104	140MP	90MP	—	—	—
R All Types.....	77	30 ³⁶	30 ³⁶	20W ³⁶	10W ³⁶	36	140MP	90MP	—	—	—
U Type C.....	97	30 ³⁶	30 ³⁶	20W ³⁶	10W ³⁶	104	140MP	90MP	6	140MP	90MP
U (Diesel), UB.....	9 ⁸⁹	330 ⁹⁰	330 ⁹⁰	320 ⁹⁰	310 ⁹⁰	104	140MP	90MP	—	—	—
UB Special, UTS Special.	9 ⁹¹	30 ³⁶	30 ³⁶	20W ³⁶	10W ³⁶	104	140MP	90MP	6	140MP	90MP
V.....	3	30	30	20W	10W	592	50	50	3	50	50
Z, ZA, ZB All Types....	77	30 ³⁶	30 ³⁶	20W ³⁶	10W ³⁶	56	140MP	90MP	—	—	—
335.....	6	30 ³⁶	30 ³⁶	20W ³⁶	10W ³⁶	48 ⁹³	90MP ⁹³	80MP ⁹³	—	—	—
445 except Diesel.....	7	30 ³⁶	30 ³⁶	20W ³⁶	10W ³⁶	64 ⁹³	80MP	80MP	—	—	—

(continued on next page)

OLIVER

Wheel Type

60 Series.....4	36					48	140	90	—	—	—
70 Series.....5	36					52	140	90	—	—	—
80 Series.....8	36					96	140	90	—	—	—
Super 55.....4	94	20,20W	20,20W	10W	5W-20	40	140	90	—	—	—
86, Super 66 Series.....4	94	10W-30	10W-30	5W-20		36	140	90	—	—	—
77, Super 77 Series.....5	94					36	140	90	8 ⁹⁵	140 ⁹⁵	90 ⁹⁵
88, Super 88 Series.....6	94					36	140	90	8 ⁹⁵	140 ⁹⁵	90 ⁹⁵
90, 99 4-cylinder.....12		30 ⁹⁶	30 ⁹⁶	20W ⁹⁶	10W ⁹⁶	96	140	90	—	—	—
99 6-Cyl. Gasolene,											
Diesel.....6		30 ⁹⁶	20,20W ⁹⁶	10W ⁹⁶	10W ⁹⁶	96	140	90	—	—	—
Super 99 GM3-71											
Diesel.....13 ⁷		30 ⁹⁶	30 ⁹⁶	20W ⁹⁶	10W ⁹⁶	64	140	90	—	—	—
Super 99 Gasolene,											
Diesel.....6		30 ⁹⁶	20,20W ⁹⁶	10W ⁹⁶	10W ⁹⁶	64	140	90	—	—	—

Crawler Type—Gasolene Engine

AG, AGH.....5 ⁷	320	320	320	310	80 ⁹⁷	50	30	—	—	—
AG-6, AG-6H.....8 ⁷	320	320	320	310	80 ⁹⁷	50	30	—	—	—
BG, GBH.....6 ⁷	320	320	320	310	88 ⁹⁷	50	30	—	—	—
BGS, BGSB.....7 ⁷	320	320	320	310	88 ⁹⁷	50	30	—	—	—
DG, DGH.....13 ⁷	320	320	320	310	104 ⁹⁷	50	30	—	—	—
OC-3, OC-4, HG.....8 ⁷	320	320	320	310	16 ⁹⁸	50	30	1½	50	30
OC-6.....7 ⁷	320	320	320	310	44	50	30	9	50	30
OC-12.....8 ⁷	320	320	320	310	64	50	30	15	50	30

Crawler Type—Diesel Engine

AD, ADH.....15 ⁷	320 ⁹⁹	320 ⁹⁹	320 ⁹⁹	310 ⁹⁹	80 ⁹⁷	50	30	—	—	—
BD, BDH.....16 ⁷	320 ⁹⁹	320 ⁹⁹	320 ⁹⁹	310 ⁹⁹	88 ⁹⁷	50	30	—	—	—
DD, DDH.....20 ⁷	320 ⁹⁹	320 ⁹⁹	320 ⁹⁹	310 ⁹⁹	104 ⁹⁷	50	30	—	—	—
FD.....24	320 ⁹⁹	320 ⁹⁹	320 ⁹⁹	310 ⁹⁹	288 ⁹⁷	50	30	—	—	—
FDE.....34 ⁷	320 ⁹⁹	320 ⁹⁹	320 ⁹⁹	310 ⁹⁹	288 ⁹⁷	50	30	—	—	—
OC-6.....7 ⁷	320	320	320	310	44	50	30	9	50	30
OC-12.....16 ⁷	320	320	320	310	64	50	30	16	50	30
OC-15.....14 ⁷	320	320	320	310	64	50	30	16	50	30
OC-18.....34 ⁷	320	320	320	310	208	50	30	40	50	30

SHEPPARD

SD-2 Prior to 1956.....12	30	30	10W	10W	25 ¹⁰⁰	90MP	90MP	—	—	—
SD-2 1956.....12	30	30	10W	10W	28 ¹⁰⁰	90MP	90MP	—	—	—
SD-3, SD-4 Prior to 1956.....14 ¹⁰¹	30	30	10W	10W	25 ¹⁰⁰	90MP	90MP	—	—	—
SD-3 1956.....14	30	30	10W	10W	28 ¹⁰⁰	90MP	90MP	—	—	—
SD-4 1956.....10	30	30	10W	10W	64 ¹⁰⁰	90MP	90MP	—	—	—

TERRATRAC

200, 300, 400, 500 Series.4	330	320 ⁵⁷	310	310	16 ¹⁰²	90 ¹⁰²	80 ¹⁰²	5	90	80
400D, 500D Series.....5	530	520 ⁵⁷	510	510	16 ¹⁰²	90 ¹⁰²	80 ¹⁰²	5	90	80
600.....5	330	320 ⁵⁷	310	310	56 ¹⁰²	102	102	8	140	140
600D.....12	530	520 ⁵⁷	510	510	56 ¹⁰²	102	102	8	140	140
All other models.....4	330 ¹⁰³	320 ⁵⁷ 103	310 ¹⁰³ 104	310 ¹⁰³	16	90	80	5	90	80

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Foot notes

TRACTOR LUBRICATION CHART

¹ SAE 20W above 0°; Diesel engine, C-320 above 0°. Model WD-45 heavy service C-300 Series Oils.

² Capacity with belt pulley, 14 pints.

³ SAE 20W above +45°.

⁴ Transmission, 8 pints, add 2 pints if equipped with power take-off. Differential, 12 pints.

⁵ Add 2 pints if equipped with power take-off.

⁶ If fuel sulfur content is over 0.5%, use C-500 Series Oils.

⁷ Capacity includes oil filters.

⁸ If operating under adverse conditions and if fuel sulfur content is extremely high, then it is permissible to use C-500 Series Oils.

⁹ SAE 30 over +80°. Below -20°, 5D Koolmotor, SAE 5W-20 except 400, 500, 600 Diesel, C-310 under constant heavy load.

¹⁰ If extremely cold dilute with 6 pints kerosene.

¹¹ When oil filter is drained, 500 and 600 Series, add 2 quarts; Models LA, LA1, add 1½ quarts.

- 12 If extremely cold dilute with 10 pints kerosene.
- 13 Distillate gasoline, LP-Gas use Koolmotor Oils, except for severe service use C-300 Series Oils. Diesel engine use C-300 Series Oils, except use C-500 Series Oils if sulfur content of fuel is over .5% and for severe service.
- 14 SAE 30 above +70°. VA Series, 5D Koolmotor, SAE 5W-20 below -10°, 300 Series, gasoline, 5D Koolmotor SAE 5W-20 below -20°.
- 15 Torque Tube, V, VA Series: Late models with rear mounted hydraulic system 16 pints, use SAE 20W above +60°; SAE 10W from +60° to +32°; 5D Koolmotor SAE 5W-20 below +32°. Early models without rear mounted hydraulic system, 16 pints and VAIW, 7 pints; use SAE 90 all seasons.
- 16 In extreme cold, dilute with SAE 10W to maintain proper fluidity.
- 17 Models 300, 301, 5 quarts.
- 18 Torque Tube, 300 Series: With triple range unit, 24 pints; without unit, 28 pints, 5D Koolmotor SAE 10W-30 or Trojan Hydrafluid.
- 19 With belt pulley, 122 pints.
- 20 If extremely cold, dilute with 8 pints kerosene.
- 21 If not available and sulfur content of fuel is less than 0.4%, C-300 Series Oils can be used if oil change period is reduced.
- 22 Below -10°, dilute with kerosene to maintain proper fluidity.
- 23 Transmission and Differential: Trojan Gear Oil or Trojan MP Gear Oil. Transmission and Final Drive: SAE 140 grade above +90°; for extremely low temperatures, dilute SAE 80 with kerosene to provide fluidity.
- 24 44-inch gage, 12 pints each unit; 60-inch gage, 14 pints each unit.
- 25 Flywheel Clutch, oil type: Crankcase grade and type motor oil; D6, 9 quarts; D7, 18 quarts; D8, 16 quarts; D9, 18 quarts.
- 26 60-inch gage, 19 pints each unit; 74-inch gage, 26 pints each unit.
- 27 Lubricant must be filterable. Use Trojan MP Gear Oil.
- 28 Oil type steering clutch and brake compartments D8 Serial No. 14A3740 up, 15A1600 up, crankcase grade 28 quarts.
- 29 With auxiliary Transmission 220 pints.
- 30 SAE 330 above +50°; SAE 320 from +50 to +20°.
- 31 For very low temperatures, add 1½ pints kerosene to Transmission and ½ pint to each final drive.
- 32 New engines for first year, SAE 320 above +32°.
- 33 SAE 90 grade in Front Intermediate and Pulley Housing, 17 pints. When operating in very low temperatures, thin lubricant (transmission) with 4 pints kerosene; Front Intermediate and Pulley Housing with 1 pint kerosene.
- 34 With line power take-off, 89 pints, except Models 35, 40D4, 87 pints.
- 35 C-330 above +80°.
- 36 C-300 Series Oils for severe service.
- 37 SAE 40 above +65°.
- 38 5D Koolmotor, SAE 5W-20 below -10°.
- 39 SAE 80 for sub-zero temperatures.
- 40 Capacity of 1936 and later models (except 35 tooth sprockets) 64 pints; (28 tooth sprockets) 80 pints.
- 41 If used continuously over 30 hours for belt work, add 8 pints lubricant above level plug through fill plug.
- 42 Below 0°, dilute Transmission and Differential lubricant with ½ pint and Final Drive with ¼ pint SAE 10W.
- 43 Below 0°, drain 4 pints lubricant and replace with 4 pints SAE 10W.
- 44 Model 40H, Final Drive 1½ pints each; 420H, Final Drive 4 pints each.
- 45 If equipped with direction reverser, use SAE 80 instead of SAE 90 in Transmission and Differential.
- 46 Capacity includes 2 quarts for oil filter.
- 47 Starting engine, SAE 10W or 5D Koolmotor SAE 5W-20 or 10W-30 all temperatures. Koolmotor Oils for moderate service; C-300 Series Oils for severe service. Model R diesel 2 quarts; Series 70, 720, Models 80, 820 diesel, 1 quart.
- 48 Diesel Series 70, 720, Models 80, 820, use C-100 Series Oils. All diesels using fuel with sulfur content over 0.5% or for severe service, use C-500 Series Oils.
- 49 5D Koolmotor, SAE 5W-20 below -10°.
- 50 First Reduction Gear Case: Use grade specified for Transmission and Differential. Models 50, 520, 2 pints; all Models 60, 620, 70, 720, 3 pints. Transmission and Differential, early Model 60 Series and 60 Hi-Crop, 56 pints.
- 51 If SAE 10W is not available, SAE 20-20W can be used above +32°.
- 52 SAE 10W or 5D Koolmotor SAE 10W-30 above 0°.
- 53 SAE 20-20W under light loads.
- 54 SAE 10W below 0°.
- 55 Below +10°, drain 2 pints lubricant and replace with 2 pints SAE 10W.
- 56 SAE 90MP for sub-zero temperatures.
- 57 SAE 30 above +50°.
- 58 SAE 80 below +50°.
- 59 SAE 30 above +60°.
- 60 Differential, NAA and 600 Series, 16 pints; 800 Series, 23 pints; 700, 900 Series, 16 pints. Hydraulic System, use 16 pints Trojan Gear Oil SAE 80 above +10°; below +10°, 12 pints SAE 80 and 4 pints SAE 75.
- 61 Transmission, 4-speed, 13 pints; 5-speed, 17 pints.
- 62 For extremely severe service C-500 Series Oils.
- 63 C-310 diluted with 10% kerosene below -10°.
- 64 SAE 140MP above +90°; below -10° add 10% kerosene. Transmission, 44 pints; Differential, 88 pints.
- 65 Use SAE 30 above +80°, except 400 LP-Gas, use SAE 20-20W above +45°; SAE 10W from +45° to +15°.
- 66 With power take-off, 9 pints; with power take-off and belt pulley or belt pulley only, 10 pints.
- 67 Super C, 200, 230 with power take-off and belt pulley, 40 pints.
- 68 Fill with mixture of IH Torque Amplifier Transmission Lubricant Additive and SAE 10W Motor Oil, 2 pints additive to 32 pints SAE 10W. Do not dilute.
- 69 SAE 90 below +40°.
- 70 LP-Gas, dilute SAE 10W with kerosene as follows: From +15° to 0°, 1 quart to 7 quarts; from 0° to -20°, 2 quarts to 6 quarts.
- 71 C-300 Series Oils for normal service if sulfur content of fuel does not exceed 0.4%. C-100 Series Oils for normal service where sulfur content does not exceed 0.9% and for severe service. C-500 Series Oils for all service where sulfur content exceeds 0.9% and for very severe service, except TD-24 Series 241, use C-500 Series Oils only.
- 72 Diesel, SAE 330 above +45°. All except TD-24, may use SAE 340 over +90°.
- 73 Diesel, dilute oil with kerosene as follows: WD-9, WDR-9, Super WD-9, WDR-9, 600, 650 from +32° to +10°, 1 quart to 10 quarts SAE 10W; +10° to -10°, 2 quarts to 9 quarts. 350 from +32° to +10°, ½ quart to 4½ quarts; +10° to -10°, 1 quart to 4 quarts. All other diesels, from +32° to +10°, 1 quart to 8 quarts; +10° to -10°, 2 quarts to 7 quarts.
- 74 SAE 80MP below +20°.
- 75 SAE 140MP above +50°.
- 76 Dilute SAE 10W with kerosene as follows: (TD-6, TD-9) +32° to +10°, 1 quart; below +10°, 2 quarts; (TD-14 142 Series, all TD-14A) below -10°, 2 quarts; (TD-18, 182 Series, all TD-18A, TD-24) below -10°, 3 quarts.
- 77 SAE 80 below +10° may be used.
- 78 SAE 50 above +50°; from +20° to 0°, dilute with a maximum of 10% kerosene.
- 79 Capacity 42 pints each after gear drive model Serial No. E-6588 and converter drive model Serial No. EC-530.
- 80 Below -10°, SAE 10W plus 10% kerosene.
- 81 Differential, 32 pints; belt housing, 6 pints.
- 82 Differential, SAE 140 above -32°.
- 83 SAE 30 above +70°. SAE 20-20W below +70° for continuous extremely heavy loads. For first 50 hours of operation SAE 20 instead of SAE 30; SAE 10 instead of SAE 20-20W. Diesels for easier starting below +32°, 5W-20 may be used. Models 333, 444 and 555, 5W-20 below +32°, or if not available SAE 10W may be used.
- 84 Differential, 27 pints; belt housing, 7 pints.
- 85 When oil filter is drained, add ½ quart.
- 86 Add 4 pints if equipped with belt pulley.
- 87 Model UTIL, shuttle Transmission, 4 pints. Use C-350 all seasons.
- 88 When oil filter is changed, add 1½ quarts.
- 89 When oil filter is drained, add 6½ quarts.
- 90 C-500 Series Oils if high sulfur fuels are used.
- 91 When oil filter is changed, add 2 quarts.
- 92 Add 1 pint if equipped with belt pulley.
- 93 When tractor is equipped with Ampli-Torque, Model 445 80 pints; Model 335 fill separate unit 16 pints. SAE 80MP all seasons.
- 94 Diesel Models, C-100 Series Oils for general-duty service and No. 1 (0.5% max. sulfur) Diesel fuel; C-500 Series Oils for No. 2 (1.0% max. sulfur) and for severe service. Other Models Koolmotor Oils except for severe service C-300 Series Oils.
- 95 On high clearance Super 77 and Super 88 Models.
- 96 Normal service and engine operating temperatures, gasoline engines, use Koolmotor Oils; diesels, C-300 Series Oils. Intermittent operation, engine operating temperatures above or below normal, gasoline engines, use C-300 Series Oils; diesels, C-500 Series Oils. Diesel engines, C-500 Series Oils for No. 2 (1.0% maximum sulfur) fuel.
- 97 Capacity shown includes Transmission, Differential and Final Drives.
- 98 Add 4 pints if equipped with belt pulley.
- 99 (Models with Visco-Meter) Use grade shown as a guide; select grade which permits Visco-Meter to remain in "Run or Ideal" while operating.
- 100 Pulley compartment: Without hydraulic system SAE 90MP all temperatures; with hydraulic pump, SAE 20-20W all temperatures, except Model SD-4, SAE 10W below +32°. Models SD-2, SD-3, 17 pints; Model SD-4, 26 pints.
- 101 1955 and earlier SD-3 and SD-4; 16 quarts.
- 102 Models equipped with converter, use Trojan TC Fluid 250. Models 500, 500D with converter, 28 pints. Model 600, 600D, capacity includes converter.
- 103 Diesel Models, use C-500 Series Oils.
- 104 SAE 20W from +50° to +20°.

CITIES SERVICE ALL-NYLON CORD TIRES

Toughest, longest wearing on the market



ALL NYLON CORD **MILEMASTER** TUBE OR TUBELESS

Here's the strongest, safest, longest wearing tire on the market today – the Cities Service all nylon cord MILEMASTER Tire – with

25% MORE MILEAGE – Tube or tubeless, the all nylon cord MILEMASTER Tire gives up to 25% more mileage and pound for pound, MILEMASTER nylon cord is actually . . .

SUPER-STRONG – The new MILEMASTER cord body has maximum resistance. It's the tire that takes the "blow" out of blow-out.

QUIET AS A KITTEN – There's a new world of silence with these new tires, too. No more embarrassing squeals. And each tire carries a . . .

DOUBLE WARRANTY – So strong, so advanced is this great new tire, that Cities Service actually gives a two-year double warranty: Against defects of workmanship and against actual road hazards!

BIG TRADE ALLOWANCE FOR YOUR PRESENT TIRES – Your old tires are worth money as a trade-in for new all nylon cord MILEMASTERS. So why take chances with safety. Trade in for New MILEMASTERS. You can't buy a better tire to save your life!

Lubrication Guide

for Tractor Parts

KEY TO ABBREVIATIONS: A-O A-1 A-2 A-3—Trojan Grease A-O, A-1, A-2, A-3.
H-O H-1 H-2 H-3—Trojan Grease H-O, H-1, H-2, H-3.
EO—Engine Oil
GO—Trojan Gear Oil (See chart on pages 26, 27, 28, 29, and 30)
W—Trojan Grease W
ST—Trojan Steering Gear Oil or GO

	Pressure Fitting	Grease Cup	Oil Cup or Hand Oiled or Hand Packed	
Engine.....	See Cities Service Tractor Lubrication Chart			See Pages 26, 27, 28 29, 30, and 31
Transmission, Differential and Final Drive.....	See Cities Service Tractor Lubrication Chart			See Pages 26, 27, 28, 29, 30, and 31
Fan.....	H-O, H-1, H-2, or A-O, A-1, A-2	H-3 or A-3	EO	Some tractors have fan lubricated from engine, others grease packed at factory, in which case no additional lubrication required.
Water Pump.....	H-2 or W	H-2 or W	EO	Some tractors have impregnated bronze bushing, others grease packed at factory, in which case no additional lubrication required.
Steering Gear.....	ST			Some tractors have fitting to lubricate steering gears, others have a plug or cover plate which must be removed.
Magneto, Starter, Generator.....			EO	Some use impregnated bearings or are packed when assembled. No additional lubrication required.
Distributor Shaft.....	H-O, H-1, H-2, or A-O, A-1, A-2	H-3 or A-3	EO	
Universal Joints.....				Trojan Grease, or Gear Oil.
Wheels.....	H-2, H-3 or A-2, A-3	H-3 or A-3	H-2, H3 or A-2, A-3	For Plain Bearings provided with oil reservoir, use Trojan Gear Oil S.A.E. No. 140, Summer; S.A.E. 80, Winter.
Rear Axle Outer Bearings.....		H-3 or A-3		
Master Clutch Pilot Bearing.....	H-O, H-1, H-2, or A-O, A-1, A-2			Some tractors have clutch throw-out mechanism automatically lubricated from engine.
Release Bearing, Clutch Shift Collar.....				
Power Take-Off, Belt Pulley, Motor Lift, Power Reduction*....	H-O, H-1 H-2, or A-O, A-1, A-2	H-3 or A-3		Where separately lubricated.
Other Chassis Points.....	H-O, H-1, H-2 or A-O, A-1, A-2	H-3 or A-3	EO	

ALLIS-CHALMERS:

With "Positive-Seal" Assemblies:

C-300 or Koolmotor Oil; Above 32°F. Use S.A.E. 50; below 32°F. use S.A.E. 30; or Trojan Grease P-O, summer and winter.

Without "Positive-Seal" Assemblies (if equipped with fittings):

Trojan Gear Oil: Above 32°F. Use S.A.E. 140; 10°F. use S.A.E. 90; below 10°F. use S.A.E. 80.

Other Models (Grease Lubrication): Use Trojan Grease H-O, H-1; A-O, A-1; or Trojan F.

CLETRAC: C-300 or Koolmotor Oil; S.A.E. 20 to 50, depending on atmospheric temperatures.

OTHERS: Grease Lubricated: Trojan Grease H-O, H-1; A-O, A-1; or Trojan F. Oil Lubricated: Trojan Gear Oil S.A.E. No. 80 or 140, depending on atmospheric temperatures.

*Use Trojan Gear Oil on Gears.

1956

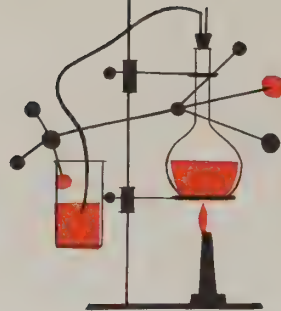
August

1958

	EASTERN			CENTRAL			MOUNTAIN			PACIFIC		
L. O.	D	H	M	D	H	M	D	H	M	D	H	M
N. M.	14	10	33	14	9	33	14	8	33	14	7	33
F. O.	21	2	45	21	1	45	21	0	45	21	11	45
F. M.	29	0	53	28	11	53	28	10	53	28	9	53

Day of Month	Day of Week	Moon's Signs	Latitude of Northern States			SUN SLOW	Latitude of Middle States			Latitude of Southern States		
			Sun rises	Sun sets	Moon rises		Sun rises	Sun sets	Moon rises	Sun rises	Sun sets	Moon rises
H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M
1 Fr	☿	☾	4 51	7 21	8 11	6 4	5 47	17 8	9 5	14 6	59 8	4
2 Sa	☿	☾	4 52	7 20	8 40	6 4	5 57	16 8	9 39	5 14	6 58	8 37
31. Day's length 14h. 26m. 14h. 19m. 13h. 42m.												
3 Su	☿	☾	4 53	7 19	9 8	6 4	5 67	15 9	8 5	5 15	6 57	9 9
4 Mo	☿	☾	4 54	7 18	9 35	6 4	5 77	14 9	36	5 15	6 56	9 42
5 Tu	☿	☾	4 55	7 16	10 4	6 4	5 97	12 10	6	5 16	6 55	10 15
6 We	☿	☾	4 56	7 15	10 36	6 5	0 7	11 10	38	5 17	6 55	10 49
7 Th	☿	☾	4 57	7 14	11 10	6 5	1 17	10 11	13	5 18	6 54	11 29
8 Fr	☿	☾	4 58	7 12	11 50	6 5	2 27	9 11	54	5 18	6 53	morn
9 Sa	☿	☾	4 59	7 11	morn	5 5	3 37	8	morn	5 19	6 52	12 11
32. Day's length 14h. 10m. 14h. 2m. 13h. 32m.												
10 Su	☿	☾	5 0	7 10	12 35	5 5	4 7	6 12	38	5 19	6 51	12 58
11 Mo	☿	☾	5 1	7 9	1 26	5 5	5 7	5	29	5 20	6 50	1 49
12 Tu	☿	☾	5 2	7 8	2 23	5 5	6 7	4	26	5 21	6 49	2 45
13 We	☿	☾	5 3	7 6	3 26	5 5	6 7	2	30	5 22	6 48	3 46
14 Th	☿	☾	5 4	7 4	sets	5 5	7 1	sets	5	23	6 47	sets
15 Fr	☿	☾	5 5	7 3	7 8	4 5	8 7	0	7	5 23	6 46	6 59
16 Sa	☿	☾	5 6	7 2	7 43	4 5	9 6	58	7 42	5 24	6 45	7 40
33. Day's length 13h. 53m. 13h. 47m. 13h. 20m.												
17 Su	☿	☾	5 7	7 0	8 18	4 5	10 6	57	8 19	5 24	6 44	8 21
18 Mo	☿	☾	5 8	6 59	8 55	4 5	11 6	56	8 56	5 25	6 43	9 3
19 Tu	☿	☾	5 9	6 57	9 32	4 5	12 6	54	9 34	5 26	6 42	9 46
20 We	☿	☾	5 10	6 56	10 14	3 5	13 6	53	10 17	5 26	6 41	10 32
21 Th	☿	☾	5 12	6 54	11 0	3 5	14 6	52	11 4	5 27	6 39	11 22
22 Fr	☿	☾	5 13	6 52	11 50	3 5	15 6	50	11 54	5 28	6 38	morn
23 Sa	☿	☾	5 14	6 51	morn	3 5	16 6	49	morn	5 28	6 37	12 14
34. Day's length 13h. 34m. 13h. 30m. 13h. 6m.												
24 Su	☿	☾	5 15	6 49	12 45	2 5	17 6	47	12 49	5 29	6 35	1 9
25 Mo	☿	☾	5 16	6 47	1 43	2 5	18 6	45	1 46	5 30	6 34	2 5
26 Tu	☿	☾	5 17	6 46	2 44	2 5	20 6	44	2 47	5 30	6 33	3 4
27 We	☿	☾	5 18	6 44	3 40	1 5	21 6	42	3 46	5 31	6 32	4 1
28 Th	☿	☾	5 19	6 43	rises	1 5	22 6	40	rises	5 32	6 31	rises
29 Fr	☿	☾	5 20	6 41	6 42	1 5	23 6	39	6 40	5 32	6 30	6 37
30 Sa	☿	☾	5 21	6 39	7 10	1 5	24 6	37	7 10	5 33	6 28	7 10
35. Day's length 13h. 16m. 13h. 10m. 12h. 54m.												
31 Su	☿	☾	5 22	6 38	7 38	0 5	25 6	35	7 38	5 33	6 27	7 42

WEATHER PREDICTIONS—1-3, clear, hot; 4-7, unsettled, stormy; 8-11, fair, unsettled; 12-15, fair, unsettled; 16-19, storms; 20-23, hot, dry, clear; 24-27, unsettled, fair; 28-31, thunder storms, fair.



USE CHEMICALS TO

No one knows exactly what weeds cost the farmer each year but it's safe to say that the figure is up in the billions of dollars. Although cultivation must continue to do a major part of the job of keeping down weeds, chemical sprays can do a part of the job cheaper and better since special chemicals for special weed-fighting jobs are being developed and tested continuously.

Pre-emergence sprays are put on the soil before the crops come up, to keep weed seeds from germinating. These are rapidly growing in popularity.

Because some of the chemicals for pre-emergence application are expensive, the cost of treatment can be lowered by spraying over the row—in row crops—rather than over-all. This will check weed growth in the rows where the cultivator can not reach. Corn, soybeans, and cotton are typical of this kind of treatment.

When conditions are favorable, a pre-emergence spray of 1½ to 2 pounds of 2,4-D ester per acre will control annual broadleaf weeds in corn about 30 days. It will not control perennial weeds nor grasses. The chemical should be sprayed at the time of planting or within 2 or 3 days thereafter. Treatment applied to light or sandy soils

may reduce stands if heavy rains follow application of the chemical.

For post-emergence treatment of corn, growth of weeds determine the best time to spray. If weeds emerge early, while the corn is still small, 2,4-D may be applied then. When weeds make later growth, spraying just before "lay by" time may be the most satisfactory.

A sprayer equipped with a straight boom is most practical for spraying corn less than 18 inches high. When larger corn is sprayed, the boom should be equipped with drop nozzles in order to apply the 2,4-D at the base of the stalks and directly on the weeds. Two-thirds of a pint of 40 per cent 2,4-D in 10 gallons of water per acre is the proper dosage. Either the amine or the low volatile ester type should be used.

A highly promising pre-emergence spray for corn and soybeans is Radox. Tests indicate that it is not likely to injure seedlings. It kills only grass seedlings. Radox appears to last longer during dry weather and does not injure soybean stands in wet weather.

Once soybeans are up, it is difficult to control weeds by spraying. The amine form of 2,4-D can be used to control broad-leaved weeds in soybeans 3 to 5 inches

CONTROL WEEDS



tall. Dinitro may be used in place of a pre-emergence spray when soybeans are coming up, to kill both grasses and broad-leaved weeds.

Application of one-third pound of the ester form or one-half pound of the amine form of 2,4-D as a treatment for wheat, oats, and barley when the grain has reached the five-leaf stage but before the boot stage, has shown good results. During this tillering stage, the grain will be 5 to 10 inches high. In experiments made to test the effectiveness of 2,4-D in grain sorghums, a very high percentage of the weeds were killed when soil and weather conditions were favorable.

Chickweed in alfalfa can be controlled with Dinitro and CIPC after the alfalfa is dormant. CIPC kills grasses and should be used only on pure alfalfa stands.

Chemical control of crab grass and many other annual summer grasses in cotton should start immediately after the crop is planted. As a pre-emergence spray, CMU (one-third to one-half pound per acre) and CIPC (1½ to 2 pounds per acre) are usually sprayed in 12-inch bands over the cotton rows.

Dalapon has shown excellent results in

controlling weeds and grasses in alfalfa, sweet clover, and lespedeza. Seedling alfalfa plants have made a quick recovery from the damage caused by the chemical. Delapon gets good control of grassy weeds in birds-foot trefoil. Do not use it when desirable grasses are present because dalapon kills all grasses.

In their earlier stages of growth, red, alsike, and ladino clover can stand up to 8 ounces of the 2,4-D amine preparation. Sweet clover can not take 2,4-D and it should be used only where the weeds threaten to take over completely. Red clover will take more MCP than 2,4-D. It kills about the same weeds as 2,4-D.

For field bindweed in all crops, use ½ to 1 pound of 2,4-D per acre when the plants are in the bud stage, from May to October if moisture is good. In most cases, the treatment must be repeated for 3 or more years.

Read the directions before you use weed killers. It is of extreme importance that you use exactly the amounts recommended because they are figured to provide a level that will give maximum weed kill but, at the same time, will not harm the crops. It is best to spray on a day when the air is calm to avoid drift to adjacent crops that might

be damaged. Also it is best to use a sprayer that is used only for applying weed killers.

Insects and rats are always on hand to take care of their usual share of the stored corn crop. Insects infest newly stored corn after it is brought in from the field, with moths and weevils as the main trouble makers. They are nearly always present in old corn and corn refuse. Therefore, the first essential is to clean the corn storage place and get rid of all refuse and trash.

A good cleaning job includes sweeping down the walls and ledges with a broom or using a vacuum cleaner, cleaning the cracks in the floor and, for additional protection, spraying the cleaned crib with an insecticide such as DDT or methoxychlor. Serious insect infestations call for fumigation. Cribbs can be made tight enough to fumigate by lining the floor and walls with a 15-pound asphalt building paper or roofing paper. If the corn is dry enough to be stored in a tight crib, it can be fumigated in the crib. If it is not dry, it can be fumigated in a tight room or crib and then moved to a slat crib for storage. Follow manufacturer's recommendations when fumigating for maximum results.

CITIES SERVICE

RUST REMOVER



REMOVES RUST
slick 'n' clean

Minutes after you apply Cities Service Rust Remover to rusted metal surfaces, you can wipe off the rust slick and clean. It's very easy to use . . . just apply by brush, spray, or dip. Non-inflammable and economical. Get a supply from your Cities Service representative.

OATS PROFITABLE AS SILAGE

It pays to put up oats as silage if it can be profitably used as a substitute for corn silage. This will often be the case where corn can be ripened for grain and will yield as well or higher than oats.

This does not mean that it pays to put extra acreage into oats. Nor does it necessarily pay to put oats up as silage if it means expanding the feeder cattle or dairy operation at the expense of the hogs.

In a cattle-hog operation, it is usually best to make grain out of the oats. The reason is this: If you had so much oat silage that you needed to keep extra beef cattle to eat it, the extra cattle would require more corn. If the extra corn for the beef was taken from the amount otherwise intended for the hogs, making silage out of oats would not pay.

As far as feed value is concerned, oats return more feed value as silage than as grain. Oat silage has less total feed value but more protein than corn silage.

Actually a farmer would be better off if he did not need to raise any oats at all because of the low return per acre from this crop compared to others. But the crop is needed to help establish legumes. Taking the oats as silage helps control some weeds and permits the new alfalfa seedlings to develop more before winter sets in.

There are two ways to make oat silage.

One is to cut the oats early, wilt it, and put it into air-tight silos at low moisture.

The other way . . . more practical for most farmers . . . is to let the oats get more mature, cut it in the early dough stage and store it in a conventional silo. It is extremely important that it be cut at the right time.

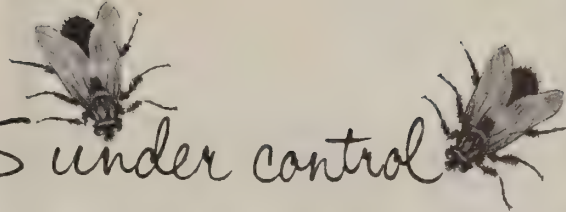
Oat silage cut too early is apt to get sour. If it is cut too late, it may "carmelize" or mold.

Experiments have shown that oats harvested as silage actually produced 48 per cent more total digestible nutrients per acre than did oats harvested for grain.

In recent trials, oats as silage averaged 2,374 pounds of total digestible nutrients per acre. When put in the grain bin, the average was only 1,600 pounds. The increase in feed value from putting the oats up as silage was equal to 17 bushels of corn or 33.9 bushels of oats grain.

A three-pound dressed chicken yields more than 1½ pounds of edible, cooked poultry meat. In this respect, chicken compares favorably with other meats in cooking and bone losses. Twenty per cent of the raw weight is bone . . . evaporation and drippings cause the rest of the loss.

How to keep FLIES under control



Get busy spraying with today's highly effective chemicals as soon as the first batch of flies start buzzing and you will have fewer flies to contend with during the rest of the summer.

Although the female house fly is short-lived, she is a prodigious egg-layer and if the weather is favorable, a new generation of flies of egg-laying age can appear every week. Keep a close watch on manure piles and other likely breeding places for house flies. If these places cannot be kept clean, treat them with malathion, diazinon, or diptrex which can be applied with a sprinkling can or as a wet spray. Be sure not to put the material on waterers or feeders.

Chemicals used around the dairy barn must meet the Government requirement that no residues will be deposited in the milk. DDT, for example, can be absorbed by cows.

Lindane and methoxychlor may be used safely in dairy barns. In time, however, flies build up a resistance to these chemicals. Best application is to spray the walls of farm buildings thoroughly and follow up with spot applications wherever flies seem to gather in large numbers.

Diazinon and malathion are also excellent fly killers when sprayed on the walls of farm buildings. Diazinon costs somewhat more than malathion but gives longer control of flies.

In addition to wall spraying, baits help

control flies. Most of the many brands of baits on the market contain diazinon, malathion, or diptrex. Baits must be kept out of the reach of livestock.

Poultry houses can be kept clear of flies by spraying the walls with malathion, methoxychlor, or lindane. Malathion should be used on the dropping pits. Diazinon must not be used near poultry.

A mechanical fogging device is very helpful if it is desired to use space sprays in barns or other buildings as a fine mist. Synergized pyrethrum, allethrin, or thiocyanates are the recommended materials.

Hornflies and stableflies are biting insects that do a lot of damage to cattle. For prevention of stableflies, clean up piles of old straw, wet weeds, and accumulation of decaying matter where they breed.

For control, spray dairy cows with one pint of 25 per cent methoxychlor concentrate mixed in 3 gallons of water. About one to two quarts per cow, sprayed every week or two, will give protection.

Beef cattle or cows that are not being milked can be sprayed with either DDT or methoxychlor. Use methoxychlor on calves under three months old. Back rubbers saturated with 5 per cent DDT or methoxychlor in oil are very helpful.

An activated pyrethrin spray, applied twice a week, will keep horseflies, deer flies, black flies, and green heads from feeding on cattle. The spray will also kill hornflies.

Protects

AGAINST

RUST!



CITIES SERVICE

ANTI-CORRODE

Cities Service Anti-Corrode forms a tough, long-lasting film that protects metal surfaces against rust and corrosion by sealing out air and moisture. Apply by brush, spray, or dip . . . easy to remove. Harmless to metal and normal skin. Ask your Cities Service representative for Anti-Corrode 100.



POISONOUS PLANTS

TEMPT POORLY

NOURISHED

CATTLE

Fortunately, most poisonous plants to which grazing cattle may have access, are relatively unpalatable because of spines, undesirable odors, or acrid flavor. Consequently, hungry or poorly nourished cattle are more likely to eat toxic plants than are well-fed cattle.

Cattle that have been housed or confined all winter will eat almost anything green in the spring. Therefore, caution should be used in turning cattle into weedy or woodland pastures in the spring before pasture grasses are available.

Weeds, a number of which may be poisonous at certain stages, may be the chief green growth in drouth-stricken summer pastures. Supplemental feeding will usually keep cattle from eating toxic amounts of such weeds.

As an example, the bull nettle seldom causes trouble. However, several years ago, bull nettles stored an unusual amount of sugar and cattle ate them in large quantities

because of the large amount of extra sweetness. Many young cattle were lost.

Thin, hungry cattle are also more susceptible to toxic materials and a relatively small dose may be fatal to them. Urea will boost gains of a steer on full feed but may kill a lean cow fed poor-quality roughage.

Silage is likely to become moldy when the silo is filled with roughage that is too dry to pack and ferment properly. Though most molds are harmless, a few are poisonous and there is always a certain risk involved in feeding any fungus or mold.

This is true of ergot in rye or grass seed, smut in corn, heated barley, moldy ear corn, or moldy silage.

If the moldy feed must be used, the risk is reduced by supplementing it with good quality feeds. The rumen of animals in good condition will destroy most of the molds. Moldy feeds are usually low in Vitamin A and a supplement is needed in such cases.

Sorghum, Sudan grass, Johnson Grass, flax, and the leaves of stone-fruit trees such as cherry, plum, and peach, contain cyanide—commonly known as prussic acid. These plants cause considerable losses in spite of widespread knowledge concerning their poisonous properties.

The greatest danger is at the time when cattle are first given access to such plants. Cattle develop a tolerance to cyanide somewhat as humans develop a tolerance to tobacco. Thus, it is helpful to have animals full before turning them into potentially dangerous pastures. Also it's best to turn animals on a new pasture for only a short time for several days.

1958

September

1958

1925

		EASTERN			CENTRAL			MOUNTAIN			PACIFIC		
L. Q.		D	H	M	D	H	M	D	H	M	D	H	M
N. M.		13	7	02	13	6	02	13	5	02	13	4	02
F. Q.		19	10	17	19	9	17	19	8	17	19	7	17
F. M.		27	4	43	27	3	43	27	2	43	27	1	43

Day of Month	Day of Week	Moon's Signs	Latitude of Northern States			SUN FAST	Latitude of Middle States			Latitude of Southern States				
			Sun rises	Sun sets	Moon rises		Sun rises	Sun sets	Moon rises	Sun rises	Sun sets	Moon rises		
			H	M	H	M	H	M	H	M	H	M	H	M
1	Mo	☾	5 24	6 36	8 7	05	5 26	6 34	8 8	5 34	6 26	8 15		
2	Tu		5 25	6 34	8 36	05	5 27	6 32	8 39	5 34	6 24	8 50		
3	We	☾	5 26	6 32	9 9	15	5 27	6 31	9 12	5 35	6 23	9 27		
4	Th		5 27	6 31	9 47	15	5 28	6 29	9 50	5 36	6 22	10 7		
5	Fr	☾	5 28	6 30	10 29	15	5 29	6 28	10 32	5 37	6 20	10 50		
6	Sa	☾	5 29	6 28	11 15	25	5 30	6 26	11 19	5 37	6 19	11 39		

36.	Day's length 12h. 56m. 12h. 53m. 12h. 40m.										
7	Su	☾	5 30	6 26	morn	25 31	6 24	morn	5 38	6 18	morn
8	Mo		5 31	6 24	12 8	25 32	6 23	12 12	5 38	6 17	12 31
9	Tu	☾	5 32	6 22	1 8	35 33	6 21	1 12	5 39	6 15	1 30
10	We	☾	5 33	6 20	2 12	35 34	6 19	2 15	5 40	6 14	2 30
11	Th		5 34	6 19	3 20	35 35	6 18	3 22	5 40	6 13	3 34
12	Fr	☾	5 35	6 17	4 32	45 36	6 16	4 33	5 41	6 11	4 40
13	Sa	☾	5 36	6 15	sets	45 37	6 14	sets	5 42	6 10	sets

37.	Day's length 12h. 36m. 12h. 35m. 12h. 27m.										
14	Su	☾	5 37	6 13	6 51	45 38	6 13	6 52	5 42	6 9	6 27
15	Mo		5 38	6 12	7 30	55 39	6 11	7 32	5 43	6 7	7 42
16	Tu	☾	5 40	6 10	8 11	55 41	6 9	8 14	5 44	6 6	8 28
17	We	☾	5 41	6 8	8 57	65 42	6 7	9 15	5 44	6 5	9 17
18	Th		5 42	6 6	9 48	65 43	6 5	9 51	5 45	6 4	10 10
19	Fr	☾	5 43	6 5	10 42	65 44	6 4	10 46	5 46	6 2	11 5
20	Sa	☾	5 44	6 3	11 39	75 45	6 2	11 43	5 46	6 1	morn

38.	Day's length 12h. 16m. 12h. 14m. 12h. 13m.										
21	Su	☾	5 45	6 1	morn	75 46	6 0	morn	5 47	6 0	12 2
22	Mo		5 46	5 59	12 38	75 47	5 59	12 42	5 47	5 58	12 59
23	Tu	☾	5 47	5 57	1 39	85 48	5 57	1 42	5 48	5 57	1 56
24	We	☾	5 48	5 56	2 39	85 48	5 55	2 41	5 49	5 55	2 54
25	Th		5 49	5 54	3 39	85 49	5 54	3 40	5 49	5 54	3 48
26	Fr	☾	5 50	5 52	4 37	95 50	5 52	4 38	5 50	5 53	4 41
27	Sa	☾	5 51	5 50	rises	95 51	5 50	rises	5 51	5 51	rises

39.	Day's length 11h. 57m. 11h. 57m. 11h. 58m.										
28	Su	☾	5 52	5 49	6 10	95 52	5 49	6 10	5 52	5 50	6 16
29	Mo		5 53	5 47	6 39	105 53	5 47	6 41	5 52	5 49	6 51
30	Tu	☾	5 54	5 45	7 11	105 54	5 45	7 13	5 53	5 48	7 26

58

WEATHER PREDICTIONS—1-3, cooler; 4-7, fair, wind squalls; 8-11, stormy, fair; 12-15, severe storms, hurricane weather, fair; 16-19, fair; 20-23, unsettled; 24-27, stormy; 28-30, rain, wind.

DEBEAKING CONTROLS CANNIBALISM



Debeaking is the most satisfactory method of preventing cannibalism among chickens.

Cannibalism, a tendency of chickens to pick at one another, has increased rapidly within the past few years and is recognized as a serious poultry management problem. Feather pulling, toe picking and vent picking which may lead to serious injury or to the death of birds, comes under this classification.

The loss from cannibalism oftentimes causes a substantial drain on the profit of a flock.

Some guess work is still attached to the cause of this problem, but breeding, nutrition, weather and management usually gets the blame.

By trimming the beak, chickens cannot grasp feathers of other birds and pull them out. Debeaking is effective in both laying and broiler flocks and hopper feeding usually is required following the operation.

Electrically heated debeakers which cut and cauterize the beak at the same time are on the market. Ordinarily, only the upper beak of pullets is trimmed to the quick. That's about one-fourth to one-third of an inch from the tip.

It is preferable to debeak several weeks before pullets commence to lay, but it may

be done earlier if cannibalism shows up before that time.

The effects of debeaking on production are not known exactly but at any rate it greatly offsets the detriments of cannibalism.

As to preventive measures, over-crowding increases the picking tendency. Broiler chicks need one square foot of floor space per bird. Replacement pullets under six weeks old need one-half of a square foot while 10- to 12-week-old birds should be provided one foot.

At least three square feet is needed for each leghorn and other light breeds and four square feet for heavier strains.

Crowded hoppers and watering fountains may also cause cannibalism. Sufficient numbers should be furnished so all birds may feed at one time. Properly ventilated houses may help eliminate the condition.

Twenty to 25 nests are needed for every 100 laying hens and birds that insist on laying on the floor or in corners should be placed into nests. This, too, will help stop one bird picking another.

Finally, birds which are seen consistently picking at others should be removed from the flock.

The loss of chickens because of sickness may be beyond the poultryman's control,

but to lose birds because of cannibalism or other careless management is fully the poultryman's responsibility.

* * *

Corrective measures need to be used against cannibalism as soon as an outbreak is noticed. A "shotgun" procedure is sometimes used effectively by some producers looking for immediate temporary relief. These measures include the following.

One—turning birds outside until trouble stops.

Two—providing leafy hay or green feed in the house to keep hens busy—birds are tempted to get in trouble if they have a lot of leisure time. Feeding whole oats to laying hens at the rate of five to six pounds per 100 layers daily is sometimes suggested.

Three—the use of an anti-pick salve. Obtainable at poultry supply houses, the salve is applied to both picked and non-picked birds and to at least 25 per cent of the flock. Anti-pick salves are red in color, resembling dried blood, and are very objectionable in taste.

Four—adding salt to the drinking water at the rate of two ounces per gallon of water for a period of 48 hours.

1958

October

1958

	EASTERN				CENTRAL				MOUNTAIN				PACIFIC			
L. Q.	5	8	20	A	5	7	20	A	5	6	20	A	5	5	20	A
N. M.	12	3	56	A	12	2	56	A	12	1	56	A	12	0	56	A
F. Q.	19	9	07	M	19	8	07	M	19	7	07	M	19	6	07	M
F. M.	27	10	41	M	27	9	41	M	27	8	41	M	27	7	41	M

Day of Month	Day of Week	Moon's Signs	Latitude of Northern States			Latitude of Middle States			Latitude of Southern States		
			Sun rises	Sun sets	Moon rises	Sun rises	Sun sets	Moon rises	Sun rises	Sun sets	Moon rises
H	M	H	M	H	M	H	M	H	M	H	M
1	We	☾	5 56	5 43	7 47	10 55	5 44	7 50	5 54	5 46	8 5
2	Th	☾	5 57	5 41	8 26	11 56	5 42	8 30	5 54	5 45	8 48
3	Fr	☾	5 58	5 40	9 10	11 57	5 40	9 14	5 55	5 43	9 33
4	Sa	☾	5 59	5 38	10 01	11 58	5 39	10 4	5 55	5 42	10 23

40.	Day's length 11h. 36m. 11h. 37m. 11h. 45m.											
5	Su	☾	6 05	5 36	10 56	12 6	05 37	10 59	5 56	5 41	11 17	
6	Mo	☾	6 15	5 35	11 56	12 6	15 35	11 59	5 57	5 40	morn	
7	Tu	☾	6 25	5 33	morn	12 6	25 33	morn	5 58	5 38	12 15	
8	We	☾	6 45	5 31	12 59	12 6	45 30	1 2	5 58	5 37	1 14	
9	Th	☾	6 55	5 29	2 8	13 6	45 30	2 10	5 59	5 36	2 19	
10	Fr	☾	6 65	5 28	3 18	13 6	55 29	3 19	5 59	5 35	3 24	
11	Sa	☾	6 75	5 26	4 32	13 6	65 27	4 32	6 05	5 34	4 32	

41.	Day's length 11h. 16m. 11h. 18m. 11h. 31m.											
12	Su	☾	6 8	5 24	sets	14 6	75 25	sets	6 1	5 32	sets	
13	Mo	☾	6 9	5 22	6 2	14 6	85 24	6 4	6 25	5 30	6 16	
14	Tu	☾	6 10	5 20	6 48	14 6	95 22	6 51	6 35	5 29	7 6	
15	We	☾	6 12	5 19	7 38	14 6	115 21	7 41	6 35	5 28	7 59	
16	Th	☾	6 13	5 18	8 32	14 6	125 19	8 36	6 45	5 27	8 57	
17	Fr	☾	6 14	5 16	9 30	15 6	135 18	9 34	6 45	5 26	9 53	
18	Sa	☾	6 15	5 15	10 30	15 6	145 16	10 34	6 55	5 25	10 52	

42.	Day's length 10h. 57m. 11h. 0m. 11h. 18m.											
19	Su	☾	6 16	5 13	11 32	15 6	155 15	11 35	6 6	5 24	11 50	
20	Mo	☾	6 17	5 11	morn	15 6	165 13	morn	6 6	5 22	morn	
21	Tu	☾	6 19	5 10	12 33	15 6	175 12	12 35	6 7	5 21	12 48	
22	We	☾	6 20	5 8	1 32	16 6	185 11	1 34	6 8	5 20	1 42	
23	Th	☾	6 22	5 7	2 31	16 6	195 9	2 31	6 9	5 19	2 36	
24	Fr	☾	6 23	5 6	3 29	16 6	205 8	3 29	6 10	5 17	3 30	
25	Sa	☾	6 24	5 4	4 26	16 6	225 6	4 25	6 11	5 16	4 23	

43.	Day's length 10h. 37m. 10h. 41m. 11h. 4m.											
26	Su	☾	6 25	5 2	5 24	16 6	235 4	5 22	6 12	5 16	5 15	
27	Mo	☾	6 26	5 1	rises	16 6	245 3	rises	6 13	5 15	rises	
28	Tu	☾	6 27	5 0	5 47	16 6	265 2	5 50	6 14	5 14	6 5	
29	We	☾	6 29	4 58	6 25	16 6	275 0	6 29	6 14	5 13	6 46	
30	Th	☾	6 30	4 57	7 8	16 6	284 59	7 11	6 15	5 12	7 30	
31	Fr	☾	6 32	4 55	7 56	16 6	294 58	7 59	6 16	5 11	8 18	

WEATHER PREDICTIONS—1-3, unsettled, fair; 4-7, clearing, frosts, windy; 8-11, dangerous gales, rains; 12-15, clearing, colder; 16-19, unsettled; 20-23, fair; 24-27, fair, rains; 28-31, unsettled.

AUTOMATIC LIVESTOCK WATERERS

Most farmers know that water is the cheapest livestock "feed" yet, too often, ice-covered tanks rob the farmer through reduced meat, milk, and egg production.

One report showed that dairy cows watered automatically drank 18 per cent more water and gave 3.5 per cent more milk than cows watered twice daily. Hogs drinking from electric waterers gained 10 pounds more per animal in six winter weeks than hogs watered twice daily.

Automatic electric waterers cut costs through increased production and they also save time and labor. About a fifth of the work in hog production can be eliminated when automatic waterers replace hand watering.

Selection, installation, and operation are major factors affecting the successful use of livestock watering equipment. The three most common waterers are the general-purpose drinking bowl, hog waterers, and combination hog and cattle waterers. The kind selected will depend upon the kind and maximum number of livestock on hand at any one time.

The unit itself should be sturdily built of cast iron, heavy sheet metal, or aluminum in order to withstand rough treatment. Some waterers are now equipped with fiberglass troughs. Covers over drinking troughs are desirable. They have reduced heat loss

from water surfaces by as much as 50 per cent. Covers also help keep out foreign matter.

Insulation on some waterers has reduced operating costs by as much as 23 per cent. A unit with glass wool or other "moisture resistant" insulation material is most satisfactory. Insulation on small units is of less importance than on cattle or combination waterers.

A convenient means of cleaning the water troughs should be provided.

The inlet valve should be well built and should have a capacity large enough to refill the water trough or bowl as fast as the animals drink. For a Grade A dairy operation, local regulations should be checked.

Heating elements in the water or attached to the underside of the trough are more efficient than those that warm the space enclosed by the housing unless the latter has special construction features. Elements should be moisture resistant to avoid heater failure sometimes caused by corrosion of the electrical resistance wire. Each trough should have an individual heating element.

A thermostat with a small operating range between the "on" and "off" temperatures is more efficient than one with a large range. The thermostat should be sealed to keep water out. It should be located where it can be easily adjusted or removed if nec-

essary. Several other factors need consideration.

First, livestock waterers located in protected areas—back of windbreaks, on the south side of buildings, or inside a barn or shed—are easier to keep ice-free during the winter.

Second, installation costs are less when waterers can be located near water and electric lines.

Anyone installing an automatic watering system should consider four other items before choosing a final location. These include:

One—will feedlots be rearranged in the near future?

Two—will more or different types of animals be handled?

Three—what location will make water most readily available?

Four—can two or more lots be supplied with water by placing the waterer in a fence line?

The installation is best made on a concrete slab 6 to 10 feet square and at least 4 inches thick. It should be laid on a 12-inch gravel

fill and sloped away from the waterer. General-purpose drinking bowls used for cattle should be mounted on a 17- or 18-inch pedestal.

The waterer can be connected by placing the riser pipe inside an 8- to 12-inch tile. This acts as a conduit for both water and electric lines. When a tile is put three feet below the frost line, ground heat will help prevent freezing.

The size of electrical conductors needed for a waterer depends upon the wattage, distance from power source, type of wire, and span length between poles when overhead wiring is used. Wiring should meet all safety requirements.

Underground service entrance or underground feeder cable can be used to advantage with underground electric service to waterers. It can be laid in the same trench as the water pipe at a minimum depth of 18 inches.

Each waterer should have its own disconnecting switch with only the "hot" wire fused. A three or five ampere fuse is usually enough for small waterers; a 10 or 15 ampere fuse is best for larger units.

Conduits will protect electric wires that run down service poles in feedlots if extended to 18 inches below the ground. Proper grounding of electric waterers will prevent possible injury to livestock or humans. Grounding also helps protect equipment from lightning. An underground metal water pipe is not an adequate ground under all soil conditions, therefore, when either metallic or plastic pipe is used, a separate ground rod is needed.



1958

November

1958

	EASTERN			CENTRAL			MOUNTAIN			PACIFIC		
L.Q.	D	H	M	D	H	M	D	H	M	D	H	M
N.M.	4	9	19	M	4	8	19	M	4	7	19	M
F.Q.	11	1	34	M	11	0	34	A	10	11	34	A
F.M.	17	11	59	A	17	10	59	A	17	9	59	A
	26	5	16	M	26	4	16	M	26	3	16	M

Day of Month	Day of Week	Moon's Signs	Latitude of Northern States						SUN FAST	Latitude of Middle States						Latitude of Southern States						
			Sun rises		Sun sets		Moon rises			Sun rises		Sun sets		Moon rises		Sun rises		Sun sets		Moon rises		
			H	M	H	M	H	M		M	H	M	H	M	H	M	H	M	H	M	H	M
1	Sa	♋	6	32	4	54	8	48	16	6	30	4	56	8	51	6	17	5	10	9	10	
44. Day's length 10h. 19m. 10h. 25m. 10h. 51m.																						
2	Su	♋	6	34	4	53	9	46	16	6	31	4	55	9	50	6	18	5	9	10	6	
3	Mo	♋	6	35	4	52	10	47	16	6	32	4	54	10	51	6	18	5	8	11	4	
4	Tu	♋	6	36	4	50	11	50	16	6	34	4	53	11	52	6	19	5	7	morn	morn	
5	We	♋	6	38	4	49	morn	16	6	35	4	52	morn	6	20	5	7	12	4	8	4	
6	Th	♋	6	39	4	48	12	58	16	6	36	4	51	12	59	6	21	5	6	1	6	
7	Fr	♋	6	40	4	47	2	7	16	6	37	4	50	2	8	6	22	5	5	2	11	
8	Sa	♋	6	42	4	46	3	19	16	6	38	4	49	3	18	6	23	4	3	1	16	
45. Day's length 10h. 2m. 10h. 9m. 10h. 40m.																						
9	Su	♋	6	43	4	45	4	33	16	6	39	4	48	4	31	6	24	5	4	4	24	
10	Mo	♋	6	44	4	43	5	48	16	6	40	4	47	5	46	6	25	5	3	5	34	
11	Tu	♋	6	45	4	42	sets	16	6	42	4	46	sets	6	25	5	2	sets	2	sets	sets	
12	We	♋	6	47	4	41	6	16	16	6	43	4	45	6	19	6	26	5	1	6	39	
13	Th	♋	6	48	4	40	7	14	16	6	44	4	44	7	17	6	27	5	1	7	37	
14	Fr	♋	6	49	4	39	8	16	16	6	45	4	43	8	19	6	28	5	0	8	38	
15	Sa	♋	6	50	4	38	9	19	15	6	47	4	42	9	22	6	29	5	0	9	39	
46. Day's length 9h. 45m. 9h. 53m. 10h. 29m.																						
16	Su	♋	6	52	4	37	10	22	15	6	48	4	41	10	24	6	30	4	59	10	38	
17	Mo	♋	6	53	4	37	11	24	15	6	49	4	40	11	26	6	31	4	59	11	36	
18	Tu	♋	6	54	4	36	morn	15	6	51	4	39	morn	6	32	4	58	morn	morn	morn	morn	
19	We	♋	6	55	4	35	12	23	15	6	52	4	39	12	24	6	33	4	58	12	30	
20	Th	♋	6	57	4	34	1	22	14	6	53	4	38	1	22	6	34	4	57	1	25	
21	Fr	♋	6	58	4	33	2	20	14	6	54	4	37	2	19	6	35	4	57	2	18	
22	Sa	♋	6	59	4	33	3	17	14	6	55	4	37	3	16	6	36	4	56	3	10	
47. Day's length 9h. 32m. 9h. 40m. 10h. 19m.																						
23	Su	♋	7	0	4	32	4	14	14	6	56	4	36	4	11	6	37	4	56	4	3	
24	Mo	♋	7	1	4	31	5	11	13	6	57	4	35	5	8	6	37	4	55	4	58	
25	Tu	♋	7	2	4	31	6	7	13	6	58	4	35	6	3	6	38	4	55	5	48	
26	We	♋	7	4	4	30	rises	13	6	59	4	35	rises	6	39	4	55	rises	rises	rises	rises	
27	Th	♋	7	5	4	30	5	52	12	7	1	4	34	5	56	6	39	4	55	6	15	
28	Fr	♋	7	6	4	29	6	44	12	7	2	4	34	6	47	6	40	4	55	7	6	
29	Sa	♋	7	7	4	28	7	40	12	7	3	4	33	7	43	6	41	4	55	8	1	
48. Day's length 9h. 20m. 9h. 29m. 10h. 12m.																						
30	Su	♋	7	8	4	28	8	39	11	7	4	4	33	8	42	6	42	4	54	8	58	

WEATHER PREDICTIONS—1-3, snow flurries; showers; 4-7, severe storms; 8-11, winds, rains, unsettled; 12-15, storms; 16-19, stormy, snow, fair; 20-23, stormy; 24-27, fair; 28-30, clear, snow.

Handy Reference

SURVEYOR'S MEASURE

7.92 Inches 1 Link
 100 Links 1 Chain
 25 Links 1 Rod
 4 Rods 1 Chain
 10 Square Chains or 160 Sq. Rods. 1 Acre
 640 Acres 1 Square Mile
 36 Sq. Miles (6 Miles Sq.) ... 1 Township
 An acre contains 4,840 Square Yards or
 43,560 Square Feet. A Square Acre Measures 208.71 Feet on each side.

CUBIC MEASURE

1,728 Cubic Inches 1 Cubic Foot
 27 Cubic Feet 1 Cubic Yard
 2,150.42 Cubic Inches .. 1 Standard Bushel
 231 Cubic Inches 1 Standard Gallon
 1 Cubic Foot804 of a Bushel
 128 Cubic Feet 1 Cord (Wood)
 40 Cubic Feet 1 Ton (Shipping)

SQUARE MEASURE

144 Square Inches 1 Square Foot
 9 Square Feet 1 Square Yard
 30½ Square Yards 1 Square Rod
 160 Square Rods 1 Acre
 40 Square Rods 1 Rood
 4 Roods 1 Acre
 640 Acres 1 Square Mile

LONG MEASURE

12 Inches 1 Foot
 3 Feet 1 Yard
 5½ Yards 1 Rod
 40 Rods 1 Furlong
 320 Rods 1 Mile
 1760 Yds. (5,280 Feet) 1 Mile

LIQUID MEASURE

4 Gills 1 Pint
 16 Fluid Ounces 1 Pint
 2 Pints 1 Quart
 4 Quarts 1 Gallon

DRY MEASURE

2 Pints 1 Quart
 8 Quarts 1 Peck
 4 Pecks 1 Bushel

TROY WEIGHT

24 Grains 1 Pennyweight
 20 Pennyweights 1 Ounce
 12 Ounces 1 Pound

APOTHECARIES' WEIGHT

20 Grains 1 Scruple
 3 Scruples 1 Dram
 8 Drams 1 Ounce
 12 Ounces 1 Pound
 The Ounce and the Pound in this system are the same as in troy weight.

HOUSEHOLD MEASURE

80 Drops 1 Teaspoon
 3 Teaspoons 1 Tablespoon
 2 Tablespoons 1 Fluid Ounce
 4 Tablespoons ¼ Cup
 8 Tablespoons ½ Cup
 16 Tablespoons 1 Cup

MARINERS' MEASURE

6 Feet 1 Fathom
 5,280 Feet 1 Statute Mile
 6,080 Feet 1 Nautical Mile
 3 Marine Miles 1 Marine League

APPROXIMATE MEASURE

Individual Can 1 Cup
 No. 1 Can 1-1/3 Cups
 No. 2 Tall Can 2 Cups
 No. 2 Average-Size Can 2½ Cups
 No. 2½ Can 3-3/5 Cups
 No. 3 Can 4 Cups
 No. 5 Can 7 Cups
 No. 10 Can 13½ Cups
 1 British (Canadian)
 Gallon 277.274 Cubic Inches
 1 Pint of Water Weighs 1.0431 Lbs.

MISCELLANEOUS

4 Inches 1 Hand
 9 Inches 1 Span
 31½ Gallons 1 Barrel
 2 Barrels 1 Hogshead
 U. S. Gallon 231 Cubic Inches
 12 Dozen 1 Gross

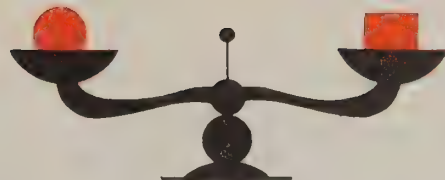
AVOIRDUPOIS WEIGHT

27-11/32 Grains 1 Dram
 16 Drams 1 Ounce
 16 Ounces 1 Pound
 25 Pounds 1 Quarter
 4 Quarters 1 Hundredweight
 2000 Pounds 1 Short Ton
 2240 Pounds 1 Long Ton

WEIGHTS OF MILK AND CREAM

Cream (30% Butterfat) .. Qt. 2.1075 Lbs.
 Cream (30% Butterfat) .. Gal., 8.43 Lbs.
 Milk (3% Butterfat at
 68 Degrees) Qt., 2.15 Lbs.
 Milk (3% Butterfat at
 68 Degrees) Gal., 8.60 Lbs.

Data



RULES FOR COMPUTING INTEREST

To find the interest on a given sum, for any number of days at any rate of interest: At 3%, multiply the principal by the number of days and divide by 120.

At 4%, same as above and divide by 90.

At 5%, same as above and divide by 72.

At 6%, same as above and divide by 60.

At 7%, same as above and divide by 52.

At 8%, same as above and divide by 45.

At 9%, same as above and divide by 40.

At 10%, same as above and divide by 36.

APPROXIMATE MOISTURE OF FORAGE CROPS AT TIME OF CUTTING

Crop	Stage of Growth		
	Immature	Bloom Stage	Mature
	Percent	Percent	Percent
Bermuda.....	—	65	—
Alfalfa.....	80	75	70
Brome Grass.....	85	65	58
Ladino.....	90	85	80
Lespedeza (annual).....	—	65	60
Native range grasses.....	—	55	—
Orchard grass.....	81	72	52
Red Clover.....	82	74	66
Soybeans.....	75	72	70
Sudan grass.....	—	72	—
Timothy.....	78	67	50

ELECTRICAL UNITS

1 Kilowatt=1000 watts.

1 Kilowatt=1.34 H.P.

1 Kilowatt=44,257 foot-pounds per minute.

1 Kilowatt=56.87 Btu. per minute.

1 horse power=746 watts.

1 horse power=33,000 foot-pounds per minute.

1 horse power=42.21 Btu. per minute.
1 Btu. (British thermal unit)=778 foot-pounds.

1 Btu=0.2930 watt-hour.

1 joule=1 watt-second.

TEMPERATURE CHART FOR POULTRYMEN

Still air incubator, 101° to 103° F.

Forced draft incubator, 99° to 100° F.

Hover, day old chicks, 95° to 100° F.

Hover, 1 to 2 weeks old chicks, 90° F.

Hover, 2 to 3 weeks old chicks, 85° F.

Hover, 3 to 4 weeks old chicks, 80° F.

Room housing incubator, 70° F.

Fertile eggs start incubation at 69° F.

Eggs for hatching, keep between 50° and 60° F.

Eggs at farm, store, or home, keep at 40° to 55° F.

Eggs deteriorate very rapidly between 80° and 100° F.

Cold storage eggs held at 29° to 30° F.

Eggs freeze at 28° F.

CAPACITY OF CIRCULAR METAL CORN CRIBS

Capacity Shell Corn Bushels	Capacity Ear Corn Bushels	Diameter	Height
200	115	6'-4"	8'
325	187	8'-0"	8'
455	266	9'-6"	8'
570	327	9'-6"	10'
635	390	11'-2"	8'
785	475	11'-2"	10'
905	530	12'-0"	10'
1100	600	12'-9"	10'

Ear corn 4000 cu. in. per bushel of 70 pounds.
Shell corn at 2150 cu. in. per bushel.

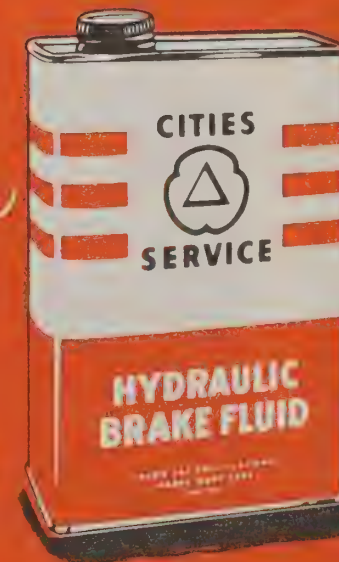
CITIES SERVICE

HYDRAULIC BRAKE FLUID

100% EFFICIENT
HEAVY DUTY TYPE

*provides
maximum
safety*

UNDER
MOST RUGGED
CONDITIONS



Cities Service Hydraulic Brake Fluid is premium-grade . . . heavy duty . . . gives maximum safety and performance in all hydraulic brake systems of heavy trucks. Exceeds S.A.E. standards for heavy duty brake fluids, with an operating range from 60° F. below zero to more than 300° F. above zero. Lubricates, reduces friction, protects against corrosion. Excellent for all hydraulically operated equipment. Available in pint and gallon containers.

✓CITIES SERVICE PENETRATING OIL



*frees
rusted
parts*

Reaches parts difficult to lubricate. Penetrates quickly through rust and dirt to free corroded parts. Frees rusted-in bolts and nuts. One use will often more than pay for its cost. Furnished in convenient spout-top can. Keep one handy.

Weights, in Pounds, per Quart (Dry Measure) and per Bushel are as follows:

Feed	Approximate Weight		Feed	Approximate Weight	
	Lbs. Per Quart	Lbs. Per Bushel		Lbs. Per Quart	Lbs. Per Bushel
Alfalfa Meal.....	0.6	19	Linseed-oil meal (new process)....	.9	29
Barley.....	1.5	48	Meat scrap.....	1.3	42
Beef Pulp (dried).....	.6	19	Molasses feed.....	.8	26
Brewers, grain (dried).....	.6	19	Oats.....	1.0	32
Buckwheat.....	1.6	50	Oats, ground.....	.7	22
Buckwheat bran.....	1.0	29	Oat middlings.....	1.5	48
Corn, husked ear.....	—	70	Peanut meal.....	1.0	32
Corn, cracked.....	1.6	50	Rice bran.....	.8	26
Corn, shelled.....	1.8	56	Rye.....	1.7	56
Corn meal.....	1.6	50	Soybeans.....	1.8	60
Corn-and-cob meal.....	1.4	45	Tankage.....	1.6	51
Cottonseed meal.....	1.5	48	Velvet beans, shelled.....	1.8	60
Cowpeas.....	1.9	60	Wheat.....	1.9	60
Distillers grain (dried).....	.6	19	Wheat bran.....	.5	16
Fish meal.....	1.0	35	Wheat middlings, standard.....	.8	26
Gluten feed.....	1.3	42	Wheat screenings.....	1.0	32
Linseed-oil meal (old process).....	1.1	35			

CAPACITY OF CORN CRIBS (Dry Ear Corn) (Height, 10 Feet)

Width-Feet	Length-Feet											
	12	14	16	18	20	22	24	28	32	36	48	64
6.....	320	373	427	480	533	587	640	747	853	960	1280	1707
6½.....	347	404	462	520	578	636	693	809	924	1040	1387	1849
7.....	373	436	498	560	622	684	747	871	996	1120	1493	1991
7½.....	400	467	533	600	667	733	800	933	1067	1200	1600	2133
8.....	427	498	569	640	711	782	853	996	1138	1280	1707	2276
8½.....	453	529	604	680	756	831	907	1058	1209	1360	1813	2418
9.....	480	560	640	720	800	880	960	1120	1280	1440	1920	2560
10.....	533	622	711	800	889	978	1067	1244	1422	1600	2133	2844

ONE MONTH TO SAME DAY IN ANOTHER MONTH

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
January.....	365	31	59	90	120	151	181	212	243	273	304	334
February.....	334	365	28	59	89	120	150	181	212	242	273	303
March.....	306	337	365	31	61	92	122	153	184	214	245	275
April.....	275	306	334	365	30	61	91	122	153	183	214	244
May.....	245	276	304	335	365	31	61	92	123	152	184	214
June.....	214	245	273	304	334	365	30	61	92	123	153	183
July.....	184	215	243	274	304	335	365	31	62	92	123	153
August.....	153	184	212	243	273	304	334	365	31	61	92	122
September.....	122	153	181	212	242	273	303	334	365	30	61	91
October.....	92	123	151	182	212	243	273	304	335	365	31	61
November.....	61	92	120	151	181	212	242	273	304	334	365	30
December.....	31	62	90	121	151	182	212	243	274	304	335	365

EXAMPLE: How many days from June 10 to Nov. 10? Find the month of June in the left-hand column. Follow across to the column under Nov. The answer: 153 days.

CLOVER AND ALFALFA PESTS



Spittlebug sprays are most effective when applied in late April and early May. The preferred treatment by many experts is heptachlor at 1½ pints of the 25 per cent emulsifiable concentrate per acre. It should be mixed with sufficient water to provide even distribution. Heptachlor will not leave objectionable residues and sprayed fields can be pastured 7 to 10 days later.

In the past, BHC has been used widely for spittlebug control with excellent results. However, its use, along with all other insecticides, is now being reappraised under the amended Federal food and drug law. Generally, insecticides should not be applied when insects are pollinating the crops. Be sure to check on the length of time to leave after treatment before harvest. This information can be obtained from the label.

For spittlebug control, lindane, methoxychlor, and toxaphene may also be used. For fall treatment, use DDT.

Leafhoppers generally show up when second-growth alfalfa is 4 to 6 inches high. Use a spray containing one-half pound of methoxychlor per acre when the first hoppers appear. One-half pound of malathion per acre or one-fourth pound per acre of parathion may also be used. Parathion is a dangerous poison which should be applied only by an experienced operator.

Aldrin, dieldrin, heptachlor, or toxaphene are effective against grasshoppers whenever the need arises . . . usually June through September. A mixture of one-half pound of DDT per acre with a grasshopper insecticide can be used to protect young legume seedlings against grasshoppers after the grain is taken off.

The spotted alfalfa aphid is a gluttonous feeder and a very prolific breeder and can wipe out whole fields of alfalfa in a short time. Malathion or parathion should be applied when aphids are becoming prevalent but prior to packing on stem and curling and drying of leaves. Parathion is a poison and should be applied by professional operators.

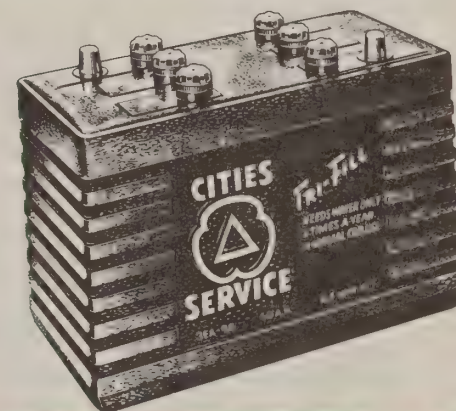
When raising alfalfa for seed, use one-half pound technical DDT and mix with either one-eighth pound of technical dieldrin or three-fourths pound technical toxaphene per acre. For first-crop seed, apply it in the late bud pre-blossom stage or when the first spittlebugs or alfalfa plant bugs appear, whichever is earlier.

For second-crop seed, apply the same mixture when the alfalfa is 6 inches high and again when the alfalfa is in the pre-blossom stage.

For other legume crops for seed, use the same mixture after the buds have formed but before the blossoms appear.

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12 VOLT DRY-CHARGED

"TRI-FILL" BATTERY



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Lasts Up to 70% Longer

The New Cities Service 12 Volt Dry-Charged Tri-Fill Battery can't lose power in storage. The electrolyte power solution is not added till the moment of installation. Tough fibreglas insulation locks in precious power . . . and the 12 Volt Tri-Fill needs water only three times a year in normal use. Backed by a 4-Year Warranty for longer life . . . more powerful performance.

MAINTAIN EGG QUALITY AND PRODUCTION

Heat is an egg's worst enemy and that statement should be noted by farmers, distributors, retailers and housewives. The other two enemies that make it difficult to preserve top egg quality in warm weather are dryness and lapse of time. The interval between the time the egg is laid and the body heat of the hen has been removed should be reduced to a minimum.

Eggs should be gathered four times a day in hot weather. The eggs should be taken to the egg storage room in wire baskets and cooled as quickly as possible. The quicker the eggs are cooled, the better chance the producer will have to get a good price for them.

The temperature in the farm egg storage room should range between 50 and 60 degrees. The temperature is not only important for cooling the eggs but also for holding them until they are picked up for marketing.

Relative humidity in the egg storage room should be between 70 and 80 per cent. If the egg room is dry, moisture will be removed from the eggs with a resulting loss in quality. Egg cases with fillers and flats also should be stored in the cool, moist egg storage room. Eggs packed in dry, warm

cases will sustain further loss in quality.

Retailers will profit from buying eggs twice a week and placing them under refrigeration immediately. Eggs displayed in refrigerated cases sell more readily.

Temperatures above 80 degrees mean decreasing egg production, egg size, and rate of growth. Chickens, which have no sweat glands, need to keep cool if production is to be maintained.

One of the cheapest and most effective helps is plenty of cool drinking water. In hot weather, the drinking space should be

at least doubled.

Extra water pans or troughs should be on the floor so that the birds do not have to jump on a stand to get water. The pans and troughs should be protected with wire grills or other devices so that a few birds cannot perch on the waterer and keep other birds from drinking.

When mechanical feeders are used, waterers should be on both sides of the feeder so that the birds do not have to climb over the feed trough to reach water.

The water must be reasonably cool to do an effective job of keeping the chickens cool. Waterers on range should at least be shaded. Pipes should be underground.

One plan used successfully is to have one extra five-foot trough for every 100 birds. These extra troughs are kept in readiness in the chicken house and put in use as soon as the temperature goes above 80 degrees. A long hose with a squeeze valve on the end makes filling the troughs easy. When the hot spell passes, the troughs are hung out of the way in a handy location.

Other ways to keep chickens cool include: painting the roof white, sprinkling water on the roof, extra ventilation, use of fans, insulation and shade.



MAKING YOUR HORIZONTAL SILO



When planning to build a horizontal silo, its location, size, and type of construction need careful thought. Trenches and bunkers are two main types of horizontal silos. Either type provides convenient and economical storage for forage crops.

Here are some pointers on location, size and construction methods.

Locate a horizontal silo, bunker or trench, on a nearly level but well-drained site. Ideal locations for trench silos are hillsides or banks. Trench silos can be built on level ground below the surface but areas with seepage or high water tables must be avoided. Bunker silos can be located wherever there is adequate drainage. Any silo should be conveniently near the feedlots or barns.

To determine the size of silo, consider the number of animals in the herd, amount of silage to be fed, and number of days the silage is to be fed. At least a 12-inch slice of silage should be fed every 3 days to prevent spoilage.

Bunker silos should not be over 8 feet deep; six feet is better for self-feeding. Trench silos should be at least 6 feet deep

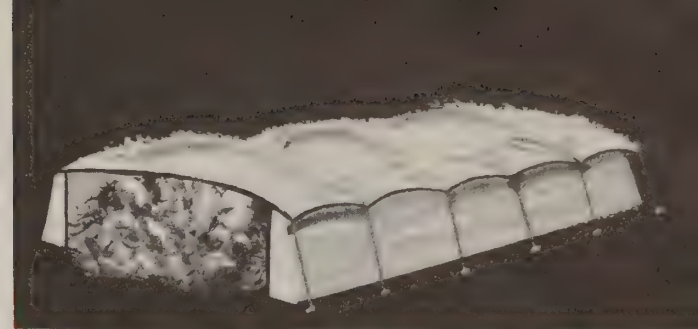
but the deeper the better.

The width should be at least $1\frac{1}{2}$ to 2 times the width of the rear tread of the tractor that will be used to pack the silage. If a tricycle or row-crop tractor is used, the width should be $1\frac{1}{2}$ times the rear tread, but with a tractor having wide front wheels, the width should be at least twice the tread width. Allow 6 inches per animal at the bottom of the silo for self-feeding.

Silo length will depend on the particular feeding requirements. The bigger the herd and the longer the feeding period, the longer the silo will have to be.

Horizontal silos can be lined with many types of building materials. For a more permanent structure, trench silos can be lined with concrete, cast-in-place, or poured in slabs on the floor and tilted into place. Other methods are hand plastering or gunnite. Tongued and grooved planks or masonry blocks are also good.

Above-ground trench and bunker silos should have a concrete floor with a $\frac{1}{4}$ inch per foot slope from the center to each side and 6 inches per 50 feet of length. Concrete tilt-up slabs, tongued and grooved



planks, or masonry blocks can be utilized for the walls. Heavy poles, timber, or concrete pillars can support the walls.

It is a good practice to back-fill with earth around the outside walls of above-ground silos. All lumber should be pressure-treated to prevent rapid deterioration from the silage acids.

Thorough packing is the final step to having good silage. Each load of chopped forage should be spread, leveled, and packed as it is placed in the silo.

To pack tightly, the forage must be fairly high in moisture (65% to 75%) and it must be finely chopped. One-half inch is a good length of cut for most types of silage.

A forage chopper in good repair will give a fine, even cut. It must be well-adjusted and have sharp knives. During filling, the surface of the silage should be kept in a little low in the center but a crown of 1 to 2 feet should remain when the filling is completed. Packing the silage should continue for 1 hour each day for 2 or 3 days after filling is completed.

Following the packing, the surface of the silage must be covered to seal out air and water and reduce spoilage.

Christmas tree Quality improved by pruning



Late May and early June is the time of year to prune Christmas tree plantations of jack, Scotch, white, and Virginia pines. By the time a tree gets three feet high, it can be pruned safely.

There are three reasons for pruning Christmas tree plantations. It makes the tree crown more dense, it prevents the tree from developing two leaders at the top, and it keeps the tree growing symmetrically.

In pruning to make the crown more dense, cut the top to hold the distance between branches at 12 to 15 inches. This treatment is most important for Scotch and white pines because they develop more than one whorl of limbs per season. Jack and Virginia pines develop only one whorl per year and may or may not need pruning.

To halt the development of two leaders on a tree, one must be removed or cut back to lessen the competition for the more desirable leader. If removing one leader will leave the top completely bare of foliage on one side, cut the top off the undesirable leader several inches below the top of the desirable leader. This gives the better leader the chance it needs to outgrow its rival.

Many trees need pruning to maintain their overall symmetrical, conical shape. New buds will develop where the tree is pruned, provided the pruning is confined to the present year's growth and accomplished before new needles are formed.

This process must begin when the trees are approximately three feet tall and, for best results, must be continued each year until they are harvested. Otherwise it becomes necessary to remove long limbs of

previous years' growth which will leave stubs that will not produce new buds.

This is the reason why pruning only new growth is so important. Sharp pruning shears are an ideal tool for the job. No dressing is necessary on pruning wounds.

Tree farming is now a definite part of the agricultural program of many states . . . primarily because there's a greater future to it than just harvesting and marketing Christmas trees.

Paper manufacturers are looking to tree farming as a source of pulpwood for their industry. Most of the plantings will be ready for pulpwood harvest at about 30 years of age. Scotch pine may be ready five years earlier.

Farmers will always need fence posts. With pressure treatment, a pine post can be given a life of 20 years or more.

Another consideration is the future of the permanent forest as a source of lumber. Red pine can begin to make some lumber at 40 years, but it will take about twice as long for white pine. Before lumbering comes, present plantings will have been thinned for Christmas trees, posts, and pulpwood. A thousand trees planted to start, will have been thinned down to less than a third of that number.

Increased production of newsprint, paper, felt roofing and insulation, wall, and plaster boards makes heavy demands upon forests. Practically all these can be obtained from wood waste and low-grade timber that cannot be manufactured into lumber. At present, less than 35 per cent of an average tree is recovered when sawn into lumber.

BLEACH OUT CANADA THISTLE

You or your neighbor need no longer tolerate Canada thistle—a perennial farm menace—because research has uncovered a chemical that will kill the noxious weed.

The chemical, amino triazole, kills the thistles by robbing them of chlorophyll, the green color matter that is essential to plant growth. When applied as a spray to the growing plants it causes them to turn white or pale green in color.

Canada thistle plants pick up amino triazole when it is applied to the leaves and carry it to all parts of the plant, including the extensive root system. Unlike many other herbicides, it has the ability to kill the roots.

Amino triazole now on the market is a 50 per cent product, readily soluble in water. About eight pounds of the 50 per cent material (4 pounds of actual amino triazole) per acre is required for a good kill of Canada thistles.

Best results have been obtained when applied in May when plants are from 12 inches in height to early bud stage. Spraying after the plants are in full bloom or mature has not been satisfactory.

If the spray cannot be applied before the bud stage, plants should be mowed down. Amino triazole may then be applied on regrowth that occurs after cutting. Such applications are not as effective as the earlier ones but results usually are worthwhile.

Sufficient water should be used when applying amino triazole to assure adequate coverage of all plants. When field sprayers equipped with a boom are used to apply the spray, 30 gallons of water per acre should be used. If a spray gun is used, eight pounds of amino triazole in 100 gallons of water is recommended per acre. Small patches may be sprayed with knapsack sprayers. The mixture should be two ounces of amino triazole per gallon of water and should cover about one square rod.

The thistle plants should not be disturbed by cultivation or cutting for at least seven days after the chemical has been applied.

Effective treatments will cause whitening of the plants which usually occurs some five to six days after the spray is applied. Top growth dies in two to three weeks.

It is not uncommon for new growth to appear from roots throughout the summer after the spray has been applied. Usually this new growth is abnormal, dwarf and off-color and will not survive. Regrowth which appears to be normal in color should be resprayed either this fall or next spring.

Dehorning is one of the things that need to be done to make calves bring all they're worth whether they are sold as feeder stock or fed on the farm. A calf dehorned at two to six weeks is affected less than if it is done following weaning.



1958

December

1958

	EASTERN			CENTRAL			MOUNTAIN			PACIFIC		
L. Q.	D	H	M	D	H	M	D	H	M	D	H	M
N. M.	3	8	24	3	7	24	3	6	24	3	5	24
F. Q.	10	0	23	10	11	23	10	10	23	10	9	23
F. M.	17	6	52	17	5	52	17	4	52	17	3	52
F. M.	25	10	54	25	9	54	25	8	54	25	7	54

Day of Month	Day of Week	Moon's Signs	Latitude of Northern States			SUN FAST	Latitude of Middle States			Latitude of Southern States		
			Sun rises	Sun sets	Moon rises		Sun rises	Sun sets	Moon rises	Sun rises	Sun sets	Moon rises
H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M
1 Mo	☾	☾	7 10	4 28	9 42	11 7	5 4	33	9 44	6 43	4 54	9 57
2 Tu	☾	☾	7 11	4 28	10 46	10 7	6 4	32	10 48	6 44	4 54	10 57
3 We	☾	☾	7 12	4 27	11 53	10 7	7 4	32	11 53	6 45	4 54	11 58
4 Th	☾	☾	7 13	4 27	morn	10 7	8 4	32	morn	6 46	4 54	morn
5 Fr	☾	☾	7 14	4 27	1 2	9 7	9 4	32	1 1	6 47	4 54	1 1
6 Sa	☾	☾	7 15	4 27	2 12	9 7	10 4	32	2 11	6 47	4 54	2 6

49.		Day's length 9h. 11m.			9h. 21m.			10h. 6m.			
7 Su	☾	7 16	4 27	3 23	8 7	11 4	32	3 21	6 48	4 54	3 12
8 Mo	☾	7 17	4 27	4 36	8 7	12 4	32	4 33	6 49	4 54	4 20
9 Tu	☾	7 18	4 27	5 47	8 7	13 4	32	5 43	6 50	4 54	5 26
10 We	☾	7 19	4 26	sets	7 7	13 4	32	sets	6 51	4 55	sets
11 Th	☾	7 20	4 26	5 55	7 7	14 4	32	5 59	6 51	4 55	6 18
12 Fr	☾	7 20	4 26	6 59	6 7	15 4	32	7 3	6 52	4 55	7 21
13 Sa	☾	7 21	4 27	8 4	6 7	16 4	32	8 7	6 53	4 55	8 22

50.	Day's length 9h. 5m.				9h. 15m.				10h. 2m.			
14 Su	☾	7 22	4 27	9 8	5 7	17 4	32	9 10	6 53	4 55	9 23	
15 Mo	☾	7 23	4 27	10 10	5 7	17 4	33	10 12	6 54	4 56	10 20	
16 Tu	☾	7 24	4 27	11 11	4 7	18 4	33	11 12	6 54	4 56	11 16	
17 We	☾	7 24	4 28	morn	4 7	19 4	33	morn	6 55	4 56	morn	
18 Th	☾	7 25	4 28	12 9	3 7	19 4	33	12 9	6 56	4 57	12 9	
19 Fr	☾	7 26	4 28	1 7	3 7	20 4	34	1 6	6 57	4 57	1 3	
20 Sa	☾	7 27	4 29	2 5	2 7	20 4	34	2 3	6 57	4 58	1 55	

51.		Day's length 9h. 2m.			9h. 14m.			10h. 0m.			
21 Su	☾	7 27	4 29	3 1	2 17	21 4	35	2 59	6 58	4 58	2 48
22 Mo	☾	7 27	4 30	3 58	1 7	21 4	35	3 55	6 58	4 59	3 41
23 Tu	☾	7 28	4 30	4 54	1 7	22 4	36	4 51	6 59	4 59	4 34
24 We	☾	7 28	4 31	5 48	0 7	23 4	36	5 44	6 59	5 0	5 25
25 Th	☾	7 28	4 32	rises	Sl.	7 23	4 37	rises	7 0	5 0	rises
26 Fr	☾	7 29	4 32	5 33	1 7	23 4	37	5 36	7 0	5 1	5 55
27 Sa	☾	7 29	4 33	6 31	1 7	24 4	38	6 35	7 1	5 2	6 51

52.	Day & length 9h. 4m.												9h. 15m.			10h. 1m.					
28	Su	☾	7	29	4	33	7	34	2	7	24	4	39	7	37	7	1	5	2	7	51
29	Mo	☾	7	29	4	34	8	39	2	7	24	4	39	8	41	7	1	5	3	8	51
30	Tu	☾	7	30	4	35	9	44	3	7	25	4	40	9	45	7	2	5	3	9	51
31	We	☾	7	30	4	36	10	52	3	7	25	4	41	10	52	7	2	5	4	10	54

WEATHER PREDICTIONS—1-3, rain, snow; 4-7, clearing, colder, frosts; 8-11, clear, showers, snow; 12-15, pleasant; 16-19, snow, colder; 20-23, pleasant; 24-27, fair; 28-31, stormy, snow, rain.

DORMANT SPRAYS FOR TREES AND SHRUBS



Early Spring is the time to protect woody shrubs and trees from scale insects, aphids, mites and certain plant diseases. Dormant sprays should be applied to fruit and shade trees and woody ornamental shrubs.

These sprays must be applied before plants begin to show green in their buds, since the dormant spray materials are applied in strengths that cannot be used safely when the plants are growing.

Make dormant applications before the buds of trees and shrubs open, but choose a comparatively warm spell when there will be no night freeze for 2 days. *Never repeat a dormant spray the same season.* Oil sprays will injure sugar and Japanese maple, walnut, butternut, and many coniferous evergreens. Lime sulfur will stain painted surfaces and masonry.

To protect elm, flowering cherry, oaks, rose or tulip poplar trees from scale insects, spray with superior type oil. Apply at the 3 per cent strength, that is, 3 parts oil to 97 parts of water.

For scale insects on holly and magnolia, reduce the strength of the oil emulsion to 2 per cent, or 2 parts oil in 98 parts water.

For oystershell scale on lilac and ash, and for aphid eggs on cherry, dinitro (DN) is preferred. Use at the rate of 1 quart of

liquid DN to 1 pound of dry DN to 50 gallons of water.

On apple trees and pear trees DN is used in combination with oil to protect against scale insects and to kill aphid and mite eggs. The proportions to use are $\frac{1}{2}$ quart of liquid DN or $\frac{1}{2}$ pound of dry DN with 1 gallon of superior oil to 50 gallons of water.

To control apple rot, prune all dead and weak wood from trees. Burn the removed branches, since dead twigs are infested with fungi that cause fruit rots.

On peach or plum trees, control scale insects and peach leaf curl with 6 gallons of liquid lime sulfur in 44 gallons of water (1 gallon of liquid lime sulfur to $7\frac{1}{2}$ gallons of water for smaller batches).

The same mixture of liquid lime sulfur may be used to control scale insects on juniper, or bladder gall mite on silver maple.

To prevent peach leaf curl, there are two sprays which can be used as substitutes for the liquid lime sulfur spray: Ferbam, 1 pound in 50 gallons of water (1 cup in 5 gallons for smaller batches), or 3 table-spoonsful of DN powder in 5 gallons of water. Apply according to directions.

COST OF FEED PURCHASED

[illegible]

PURCHASE OF PETROLEUM PRODUCTS

(Farm Use Only)

[illegible]

COST OF MACHINERY AND EQUIPMENT MAINTENANCE (Repairs, Accessories, and General Upkeep)

[illegible]

DEPRECIATION OF MACHINERY

[illegible]

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